Pyrenocarpeae Cubenses

a cl. **C. Wright** lectae

auctore

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Conspectus tribuum, subtribuum et generum cubensium.

Trib. I. **Dermatocarpeae;** thallus foliaceus, gompho (raro simul et rhizinis) affixus; gonidia non chroolepoidea.

1. Dermatocarpon; sporae hyalinae, simplices.

Trib. II. **Endopyrenieae;** thallus squamuliformis, subtus undique adnatus; gonidia non chroolepoidea.

2. Endopyrenium; sporae hyalinae, simplices.
3. Paracarpidium; sporae hyalinae, parenchymaticae.

Trib. III. **Striguleae;** thallus plagulaeformis, undique arcte adnatus, ad peripheriam radiatim effiguratus; gonidia chroolepoidea (in disculum phyllactoideum connata).

4. Strigula; sporae hyalinae, transversim divisae, loculi non lenticulares; paraphyses discretae.

Trib. IV. **Pyrenuleae;** thallus crustaceus, undique arcte adnatus, non effiguratus; gonidia chroolepoidea.

Subtribuum Ser. I. **Pyrenuleae campylostomaticae,** perithecium in sectione axili curvatum, in ostiolum declinatum abiens.

Subtrib. I. **Astrothelieae;** fructus compositi (aut et simul depauperando-simplices); ostiola peritheciorum cujusvis fructus conniventia (saepiusque in unum confluentia).

5. Astrothelium; sporae hyalinae, transversim divisae, loculi lenticulares.
6. Heufleria; sporae hyalinae, parenchymaticae.
7. Parmentaria; sporae fuscae; parenchymaticae.
8. Pyrenastrum; sporae fuscae, transversim divisae, loculi lenticulares.
9. Lithothelium; sporae hyalinae, transversim divisae, loculi cylindrici.

Subtrib. II. **Pleurothelieae**; fructus simplex, perithecii unici ostiolum decurvo-sublaterale.

10. Plagiotrema; sporae hyalinae, transversim divisae, loculi lenticulares.
11. Pleurothelium; sporae fuscae, parenchymaticae.
12. Parathelium; sporae fuscae, transversim divisae, loculi lenticulares.
13. Pleurotrema; sporae hyalinae, transversim divisae, loculi cylindrici.

Subtribuum Ser. II. **Pyrenuleae orthostomaticae**; perithecium in sectione axili rectum, in ostiolum rectum et erectum abiens.

Subtrib. III. **Trypethelieae,** fructus compositi, pluribus peritheciis formati, pluriostiolati, non appendiculati.

14. Trypethelium; sporae hyalinae, transversim divisae, loculi lenticulares.
15. Bathelium; sporae hyalinae, parenchymaticae.
16. Boltaria; sporae fuscae, parenchymaticae.
17. Melanotheca; sporae fuscae, transverse divisae, loculi lenticulares.
18. Tomasellia; sporae hyalinae, transverse divisae; loculi cylindrici.

Subtrib. IV. **Verrucarieae**; fructus simplex, perithecio unico formatus, 1-ostiolatus, extus non appendiculatus.

19. Verrucaria; sporae hyalinae, simplices.
20. Porina; sporae hyalinae, transversim divisae, loculi cylindrici; paraphyses discretae.
21. Clathroporina; sporae hyalinae; parenchymaticae; paraphyses discretae.
22. Arthopyrenia; sporae hyalinae, transversim divisae, loculi demum cylindrici; paraphyses connexae.
23. Polyblastia; sporae hyalinae, parenchymaticae; paraphyses connexae.
24. Pseudopyrenula; sporae hyalinae, transversim divisae, loculi lenticulares; paraphyses connexae.
25. Pyrenula; sporae fuscae, transversim divisae, loculi lenticulares.
26. Anthracothecium; sporae fuscae, parenchymaticae.
27. Microthelia; sporae fuscae, transversim divisae, loculi non lenticulares.
28. Haplopyrenula; sporae fuscae, simplices.

Subtrib. V. **Trichothelieae**; fructus simplex, perithecio unico formatus, 1-ostiolatus, extus strigis aculeolato-armatus.

29. Trichothelium; sporae hyalinae, transversim divisae, loculi cylindrici.

Trib. I. Dermatocarpeae.

Dermatocarpeae Eschweil. Syst. p. 21 pro minima parte. — Endocarpeae Körb. Syst. p. 99, Schwend. Unters. üb. d. Flechtenth. p. 24. Thallus foliaceus, centrice aut excentrice gompho peltatim affixus; gonidia globosa, viridia, aut stictinacea, sc. glomerulosa et coerulescentia. — Genera Normandina et Endocarpiscum, quae in tropicis late dispersa, in insula Cuba hucusque non observata, etiam ad hanc tribum referenda sunt.

1. Dermatocarpon.

Dermatocarpon Eschweil. Syst. p. 21. pr. p.; Th. Fries, Gen. Heterol. p. 103 pr. p.; Endocarpon Auct. pr. p.; Körb. Syst. p. 100; Schwend. l. c. p. 83 (non Hedw.).

1. **D. Mühlenbergii** Müll. Arg.; Endocarpon Mühlenbergii Ach. Syn. p. 101, sporae (ut in meo specim. ab ipso Mühlenbergio lecto) ovoideae, in ascis oblongis octonae, circ. 12—14 μ longae et 6—8 μ latae. — Species a D. miniato, s. Endocarpo miniato Ach. et a D. Moulinsii, s. Endocarpo Moulinsii Montg. differt thallo supra non cinereo-albo. Thallus fertilis subtus peritheciorum evolutione mamillari-inaequalis est, quod etiam in europaeo D. miniato occurrit. — Dermatocarpon aequinoctiale, s. Endocarpon aequinoctiale Flot. in Linnaea 1843, p. 16, ex Abyssiniae monte Silke est multo crassius subtusque haud mamillosum. — C. Wright, Verr. Cub. n. 187.

Derm. Mühl. β tenue Müll. Arg.; thallus tenuior, subtus medio tantum fusco-nigricans, caeterum fuscus v. pallide fuscus. — Reliqua omnia cum forma normali speciei subtus undique fusco-nigricante congruunt. — Verr. Cub. 187^{b}, II. 533.

Trib. II. Endopyrenieae Schwend.

Endopyrenieae Schwend. Unters. Flechtenth. p. 25 (1862), exclus. gen.; Müll. Arg. Lich. Genev. p. 72 (1863). — Endocarpeae Auct. pr. p.; Dacampieae Körb. Syst. p. 322 (1855) [sed genus Dacampia non est hujus loci et nomen Dacampiearum dein pro tribu adhiberi nequit]. — Thallus folioso- v. gleboso-squamosus, subtus (vulgo undique) rhizinis arcte adnatus; gonidia globosa, viridia.

2. Endopyrenium.

Endopyrenium Körb. Syst. p. 323.

1. **E. incrassatum** Müll. Arg., fere cum Endopyrenio Tuckermani, s. Endocarpo Tuckermani Montg. Syllog. p. 359 conveniens et hucusque incomplete notum est (specimina mea enim non nisi spermogonia et apothecia pauca valde juvenilia offerunt) at ab eo recedit thalli squamis majoribus, multo crassioribus et subtus undique nigris, unde fere pyg-

maeam formam Dermatocarpi Mühlenbergii (aliter adnati) simulat. — H. 535.

3. Paracarpidium.

Paracarpidium Müll. Arg. Lich. Beitr. n. 675.

1. **P. tenellum** Müll. Arg.; squamae exiguae, $1/2$—1 mm. latae et minores, siccae pallide fuscae, madefactae olivaceo-nigricantes, nonnihil imbricatae, ambitu latae, obtuse crenatae v. sublobatae, marginibus nonnihil adscendentibus concaviusculae, caeterum planae, non arcte adpressae, subtus nigricantes et laeves, tenuiusculae; sporae in ascis binae, copiose parenchymatice divisae, hyalinae v. demum pallide olivaceo-hyalinae, circ. 30 μ longae et 14 μ latae. — A proximo P. obscuro Müll. Arg. L. B. n. 677 recedit thallo sicco pallidiore, squamis minoribus, non arcte adpressis, paullo concavis ambituque magis suborbicularibus et dein sporis minoribus. — Verr. Cub. 188.

2. **P. pallidulum** Müll. Arg. L. B. n. 676. — Verr. Cub. n. 9, 189, H. 536.

3. **P. albidulum** Müll. Arg.; affine P. pallidulo, sed magis evolutum, squamae majores, ambitu magis elongato-opuntioideo-crenatae v. irregulares, magis albido-pallidae, convexiores et imbricatae, subtus medio nigrescentes, caeterum concolores; sporae 25—30 μ longae, 13—16 μ latae, in ascis binae, minus crebre parenchymaticae. Gonidia hymenialia ut in comparata specie. — H. 534.

4. **P. granulosum** Müll. Arg.; thalli rosulae 1—$2^1/_2$ mm. latae, adnatae, convexae, ambitu minute inciso-lobulatae, cinereo-virentes, tota superficie crebre granuloso-subrugatae, subtus pallidae; gonidia globosa, viridia; apothecia globosa, integra, inferne tenuiora, undique nigricantia aut basi inferne fusca, evoluta demum apice distincte emergentia et circ. $1/5$ mm. lata; gonidia hymenialia non visa; paraphyses quasi diffluentes, crassulae et vix distinctae; asci 8-spori, ovoidei; sporae in ascis subbiseriales, 26—28 μ longae, 12—14 μ latae, ellipsoideae, subirregulariter parenchymaticae, transversim recte aut oblique 5-septatae, loculi longitrorsum semel v. bis divisi. — A reliquis praeter habitum differt ascis 8-sporis et defectu (constante?) gonidiorum hymenialium. — H. 562 pr. p. (mixtum cum P. tenello) et H. 564 (sterile).

Trib. III. Striguleae.

Thallus substrato arcte adnatus, plaguliformis, peripheriam versus radiatim effiguratus; gonidia chroolepoidea (in disculum phyllactideum connata). — Erga Dermatocarpeas, Endopyrenieas et Pyrenuleas Striguleae se habent ut Placodieae erga Umbilicarieas, Parmelieas et Lecanoreas. Species notae omnes sunt foliicolae, sed raro simul et in ramulis junioribus observantur.

Plantae hujus tribus a cl. TREVISAN (Conspect. Verrucar. p. 17) in 4 genera, Haploblastiam, Strigulam, Phyllocharitem et Trichariam disponuntur, sed hoc ultimum genus nil est nisi evolutio peculiaris hypothallina, omni fructificatione carens, quodammodo Isidiis analoga et e generibus delenda. Haploblastia Trev. autem e falso charactere Montagneano Strigulae nitidulae stabilita similiter genus absolute falsum et supprimendum est. Strigulae Trev. dein et Phyllocharis ejusdem, non nisi numero loculorum sporarum diversae, necessario in unum genus Strigulam confluunt, sporae enim fere omnium specierum e biloculari demum in formam 4-locularem abeunt.

4. Strigula.

Strigula Fries in Vet. Akad. Handl. 1821 p. 323, ex TH. FRIES Lich. Gen. heterol. p. 112, Obs. 2.

1. **St. argyronema** Müll. Arg.; thallus demum 1—3 cm. latus, ex argillaceo-viridi mox virenti-argenteus, elongato-radians, laciniae subdichotomae et dendritice ramosae, lineares et lineari-spathulatae, hinc inde confluentes, planiusculae, undique obsolete sulcato-depressae, laevigatae; apothecia ^{5}—$^6/_{10}$ mm. lata, depresso-hemisphaerica, thallino-velata, basi tantum innata; perithecium nigrum, basi deficiens, utrinque in sectione axili patens et simul paullo incurvum; nucleus hyalinus; sporae in ascis linearibus imbricatim 1- v. fere 2-seriales, ellipsoideo-fusiformes, utrinque sensim angustatae, 2-loculares, circ. 24—26 μ longae et 6—7$^1/_2$ μ latae; pycnides apotheciis conformes sed tantum $^7/_{100}$ mm. latae; stylosporae circ. 16—18 μ longae, 2$^1/_2$ μ latae, late baculiformes. — Foliicola, II. 238 (etiam in Surinamia legit sterilem: WEIGELT).

2. **St. pulchella** Müll. Arg.; thallus laete viridis et dein albescens, plagulas 1—5 mm. latas suborbiculares margine varie lobulatas formans, compositus e lacinulis late linearibus ^{2}—$^3/_{20}$ mm. latis subdichotome ramosis totaque longitudine convexulis, nunc discretis, nunc cum vicinis plus minusve confluentibus; apothecia sparsa, pauca, $^1/_3$ mm. lata, conico-hemisphaerica, fere usque ad apicem fusco-nigrum thallino-tecta, demum superne paullo nudata; perithecium dimidiatum; asci lineares, 1-seriatim 8-spori; sporae 14—18 μ longae, 4—5 μ latae. — Thallus propter lacinulas convexulas undique spurie undulato-sculptus late costulatus apparet, at lacinulae hinc inde etiam omnino v. pro parte inter se discretae sunt. Ad St. hypotheliam Nyl. Lich. Angol. p. 15 accedit et a praecedente magnitudine multo minore, lacinulis longe magis confluentibus, non elongato-divisis et apotheciis sporisque minoribus differt. — II. D. pr. p.

3. **St. Antillarum** Müll. Arg.; Melanophthalmum Antillarum Fée Ess. p. C. t. 2, fig. 2 et Suppl. p. 146 (ubi sporae 2-loculares laudantur, sc. stylosporae tantum visae); Strigula melanophthalma Montg. Syllog. p. 376; thalli plagulae e flavo-viridi mox argenteae, juniores ambitu

lobatae, adultae 2 mm. latae, orbiculares, margine leviter crenatae, planiusculae, superficie sublaeves; spermogonia in parte centrali dense sparsa, pycnides et apothecia ob diametrum majorem varie confluentia et submaculantia; haec circ. $^8/_{100}$ mm. lata parum emersa sed nuda, nigra, nitidula; perithecia coerulescenti-nigra, superne tantum crasse evoluta, subtus deficientia; asci biseriatim 6—8-spori; sporae 13—14 μ longae, 4 μ latae, ellipsoideo-digitiformes, e 2-loculari mox 4-loculares. — Pycnides in hac specie valde numerosae, circ. 15—40, ^{5}—$^6/_{100}$ mm. latae, basi confluentes, superne liberae, saepe in quaque plagula quasi maculas 1—4 crebre nigro-granulosas formantes; stylosporae 2-loculares, 12—13 μ longae, 3—3½ μ latae, digitiformes. — Apotheciigera: II {227, 235 pr. p., H; pycnidigera: 226, C; spermogonifera: G}.

4. **St. elegans** Müll. Arg. Lich. Afric. occid. n. 44, v. **Nematora**; Strigula Nematora Montg. Cub. p. 143; Nyl. Pyrenoc. p. 67; Nematora argentea Fée Ess. p. XCIX, t. 2, fig. 4; Stigmatidium argenteum Spreng. Syst. Veg. 4, p. 243. — II, 235 pr. p.

St. elegans v. intermedia; Craspedon concretum Fée Ess. p. C et XCIV, t. 2, fig. 1; Stigmatidium concretum Spreng. Syst. Veg. 4, p. 243 pr. p.; lacinulae fere usque ad centrum v. saltem longiuscule peripheriam versus discretae, subdichotome ramosae, ultimae breves et confertae; sporae 2—4-loculares, 15—17 μ longae, 4—4½ μ latae, in ascis 2—1-seriales. — Inter var. bahiensem eumorpham et v. genuinam medium tenens. — Laciniae in centro thalli multo minus confluentes quam in var. genuina, et nomen concretum a Fée datum dein pro varietate accipi non potuit. — II. D. pr. p.

St. elegans v. genuina; Phyllocharis elegans Fée Ess. p. C, t. 2, Fig. 7; Stigmatidium elegans Spreng. Syst. Veg. 4, p. 243 pr. p. Thalli laciniae arctius connatae quam in var. praecedente saepeque fere usque ad peripheriam plagularum confluentes. — Foliicola, II {234, D pr. p.; 237 (spermogonifera), 231 pr. p., E}.

St. elegans v. gen. f. fuscata, plagulae a peripheria versus centrum sensim magis obfuscatae, glabrae (caeterum cum var. genuina conformes et eacum mixtim aut distincte crescens). — II, 237 pr. pr.

St. elegans v. gen. f. hirtella, plagulae (steriles) pallide olivaceo-fuscae, subdecorticatae, breviter hirtellae. — II, 233.

St. elegans Féei; Strigula Féei Montg. Cub. p. 125 (exclus. syn.): plagulae parvae, 1—2 mm. latae, magis convexae, caeterum cum iis var. genuinae convenientes. — II, 237 pr. p.

5. **St. complanata v. ciliata** Müll. Arg.; Strigula ciliata Montg. Centur. VI, n. 19, et in Syllog. p. 376. — II, 235 pr. p., II, 227 pr. p.

St. complanata v. mesotropa Müll. Arg.; plagulae 1—2½ mm. tantum latae; laciniae centro vulgo latiuscule confluenti-connatae, ad peripheriam subdiscretae aut discretae, planiusculae, late lineares, hirto-pilosae. —

Immixta etiam occurrit laciniis fere usque ad centrum plagularum liberis et tum a speciminibus junioribus var. ciliatae vix discernenda. — II. 191b (et in insula madagascariensi Mayotte: Boivin).

St. complanata v. genuina Müll. Arg.; Phyllocharis complanata Fée Ess. p. XCIX, t. 2, fig. 3; Strigula complanata Nyl. Pyrenoc. p. 65, pr. p.; plagulae thallinae 2—6 mm. latae, orbiculares, planae, continuae, e flavo-viridi mox virenti-argenteae, ambitu breviter crenato-lobulatae v. subintegrae, tota superficie e centro crebre radiatim plicato-costulatae et parce piligerae, costulae partim obliquae; pycnides et apothecia sparsa, illae immersae, apice nudae, haec autem magis emergentia, sed altiuscule thallino-tecta, apice nuda, $^{3}/_{10}$ mm. lata; stylosporae 55—65 μ longae, vix 2 μ latae, setaceo-bacillares, e 2-loculari demum 6—8-loculares; sporae parvae, 7—11 μ longae, 2—$2^{1}/_{2}$ μ latae, 2-loculares, in ascis linearibus superne angustioribus subbiseriales. — II. F. pr. p.

6. **St. plana** Müll. Arg.; plagulae e viridi aut obscure olivaceo-viridi demum virenti-pallidae aut albidae, novellae exiguae lobato-suborbiculares et hinc inde elongato-lobatae, lobis subinde apice iterum in plagulam evolutis, evolutae 3—4 mm. latae, magis regulariter orbiculares, margine subintegrae v. crenatae, totae subplanae, tenues, haud costatae v. obsolete concentrice subplicatae; spermogonia et pycnides sparsa; stylosporae circ. 16 μ longae, digitiformes, 2-loculares; apothecia sparsa, pauca, majuscula, ^{5}—$^{6}/_{10}$ mm. lata, apice subnuda; perithecium dimidiatum; sporae in ascis imbricatim 1-seriales, 2—4-loculares, 13—17 μ longae et 4 μ latae. — Affinis africanae St. hypotheliae Nyl. Lich. Angol. p. 15. — Plagulae subinde vetustate decorticatae occurrunt et orbillas fuscas laeves aut impresso-punctatas formant, junior bene vegetans autem est laete viridis et medium tenet inter St. elegantem v. genuinam et St. nitidulam, a qua thallo minus crustaceo, ab illa autem magis deplanato et ab utraque apotheciis magis tectis recedit. — II. {190, 228, 229, 232, 236, F. pr. p.}.

7. **St. nitidula** Montg. Cub. p. 139, Nyl. Pyrenoc. p. 68; Haploblastia nitidula Trev. Consp. Verruc. p. 16. Spermogonifera et pycnidifera cum specim. cubano Montagnei quadrant, et in Lindigii n. 2819 eandem vidi ascophoram, sporis 2-locularibus circ. 10 μ longis et 2 μ latis praeditam (nec 1-loc. ut erronee indicantur, unde genus Haploblastia Trev. dein, in hunc characterem falsum conditum, non est legitimum). — E miscell. segregat., in collect. non edita.

8. **St. subtilissima** Müll. Arg. L. B. n. 678; Rhacoplaca subtilissima Fée Ess. p. XCIX, t. 2, fig. 5. — II. {224, 231 pr. p., K}.

Trib. IV. Pyrenuleae.

Thallus crustaceus, amorphus, margine non radiatim effiguratus, undique arcte adnatus; gonidia chroolepoidea.

Subtribuum series I. Pyrenuleae campylostomaticae.

Perithecia obliqua, in ostiola declinata abeuntia.

Subtrib. I. Astrothelieae.

Astrothelieae Trev. Syn. gen. Trypeth. p. 22.

Apothecia in stromatibus plus minusve distinctis pericentrice sita et ostiola peritheciorum cujusvis fructus compositi erga centrum convergentia saepiusque in os unicum commune abeuntia. — Apothecia vulgo plura in verruca thallina commune s. stromate more Trypethelicarum inclusa, sed hinc inde simul et depauperando-solitaria occurrunt et verrucae tum subobsoletae; in aliis dein verrucae circa apothecia intime connata fere evanescunt.

5. Astrothelium.

Astrothelium Trev. Syn. gen. Tryp. p. 23; Eschweil. Syst. Lich. p. 18, fig. 25 pr. p. (1824), Nyland. Pyrenoc. p. 80 pr. p.; Pyrenodium Fée Ess. Suppl. p. 68 (1837).

Sporae ut in Trypetheliis, sed perithecia nec recta nec erga superficiem fructuum compositorum erecta, saepius plus minusve in thallum defossa.

§ 1. Sporae 4-loculares.

1. **A. conicum** Eschw. Bras. p. 163, Nyl. Pyrenoc. p. 80 (excl. Pyren. cinnamom.). — Planta normalis speciei ex insula Cuba non visa.

A. conicum β pallidum Müll. Arg., thallus argillaceo-pallescens, madefactus non rosellus. — II. {605, 606 a, b, c.}

2. **A. minus** Müll. Arg.; thallus olivaceo-flavicans, tenuis, laevis (in cortice subinsulatim disruptus); stromata sparsa, conica, parva, diametro $1/2$ mm. aequantia, primum concolores, mox superne late puniceo- v. croceo-pulveracea, basi hinc inde decolorantia, vertice poro nigro communi aperientia; apothecia nigra, in quoque stromate uniostiolato 4—6, longiuscule in collum angustata, connata; paraphyses connexae; sporae in ascis 8-nae, 2-seriales, hyalinae, oblongo-ellipsoideae, 4-loculares, 20—25 μ longae et 8—10 μ latae. — Inter A. conicum et A. ochrothelium locandum. Verr. Cub. 235.

A. minus β nigratum; stromata tota demum subnigrata. — II. 638.

3. **A. ochrothelizum** Müll. Arg.; thallus argillaceo-pallidus v. pallido-carneus, tenuis, laevigatus, instratus; stromata conico-hemisphaerica, praeter apicem late e flavicante intense croceum concolora, vertice 1-pauci-ostiolata; ostiola nigra, minute punctiformia, haud emergentia; apothecia pro quoque ostiolo 1—3, convergentia, longicolla, tota nigra, inter se et cum parte superiore nigrata stromatis connata; sporae in ascis oblique 2-seriales, 8-nae, 4-loculares, 20—26 μ longae et 8—10 μ latae. — Affine

A. conico Eschw. Bras. p. 163, sed verrucae apice tantum late croceo-tinctae, caeterum cum thallo concolores sunt, pars colorata satis arcte circumscripta, laevis, nec ferrugineo-pulverulenta. A. cinnamomeum autem, s. Pyrenastrum cinnamomeum Eschw. Bras. p. 149 (etiam in Guyana lectum: Leprieur n. 53) differt colore partium. — Verr. Cub. 144 (Trypethelium ochrothelizum Nyl. in Flora 1876, p. 365[1]), sine charact.).

4. **A. fallax** Müll. Arg.; Trypethelium pallescens Leight. Lich. of Ceyl. p. 185 n. 195 (exclus. syn.); thallus et verrucae concolores, viridi-flavicantes, ille subtenuis, rugulosus, demum evanescens et verrucae tum in hypothallo dense dispersae; verrucae hemisphaericae, nitidulae, saepe varie confluentes et multiplices, colliculoso-irregulares, ambitu sublobatae et sinuoso-tortuosae, ostiolo nigricante ab areola pallidiore subargillacea cincto nonnihil depresso ornatae; perithecia pro quoque ostiolo 4—7, dense conferta, integre nigra; sporae in ascis biseriatim 8-nae, circ. 30—35 μ longae et 10—12 μ latae, 4-loculares. — Extus simile Campylothelio superbo, at minus virens, et sporae Astrothelii. — In Ceylonia: Thwaites, et in Cuba: C. Wright (e Miscellan. segregatum, in coll. non editum; habitus plantae cubanae saltem bene convenit, sed sporae ipsae in specim. viso non evolutae sunt.).

5. **A. acrophaeum** Müll. Arg.; thallus sat crassus, demum grosse areolatim ruptus, subinaequalis, superficie ipsa laevigatus, pallide fulvus; stromata sat hemisphaerica, concolora, sed apice latissime v. fere tota superficie fusco-nigrata et circumcirca anguste decolorato-albescentia, intus apothecia vulgo 2—4 gerentia, saepissime colliculoso-confluentia et stromata composita tum pluriostiolata formantia; ostiola nigra, minute mamillaria; apothecia ad quodque osculum commune convergentia et longicolla, integre nigra sed perithecia basi valde attenuata; paraphyses connexae; asci anguste lineares, 8-spori; sporae 1-seriales, hyalinae, e biloculari saepissime 3-loculares, rarius 4-loculares, tantum 12—14 μ longae et 4—5 μ latae, elongato-ellipsoideae, utrinque obtusae. — Species sporis 3-locularibus et stromatibus demum late nigratis insignita. — Verr. Cub. 176 (Trypethelium acrophaeum Nyl. in Flora 1876, p. 365, sine charact.).

§ 2. Sporae 6—8-loculares.

6. **A. subaequans** Müll. Arg.; thallus olivaceo-flavicans, crassus, colliculoso-undulato-inaequalis, stromatibus reticulatim anastomosantibus depressis planis roseo-pallidis quasi insulari-disruptus apparens, intus albus;

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1) Cl. Dr. Nylander in Flora 1876 quibusdam numeris collectionis Wrightianae nomina nova dedit sed non stabilivit. Talia nomina, sensu determinato carentia, simpliciter informationis causa ad numeros suos citavi, at inter synonyma recipere haud potui.

stromata parce fertilia, subrimulosa; apothecia pro quoque ostiolo communi 3—6, connata, integre nigra, apice demum nigro-emergentia; ostiolum in apice nigro demum mamillari-emergens, hemisphaericum, primum cum apice apotheciorum ferrugineum, dein nigricans; paraphyses tenuissimae, connexae; sporae in ascis 8-nae, hyalinae, 70—80 μ longae et 22—25 μ latae, subfusiformi-ellipsoideae, 6-loculares. — Species nulli arcte affinis, macrospora ut A. diplocarpoide et A. subclandestino Leight. — Verr. Cub. 146 (Astrothelium subaequans Nyl. in Flora 1876, p. 365, sine char.).

7. **A. diplocarpoides** Müll. Arg.; thallus cum stromatibus concoloribus argillaceo-albidus, subtenuis, laeviusculus et subrimulosus; stromata depresso-hemisphaerica, majuscula, circ. 2 mm. lata, basi sensim in thallum abeuntia, apice 1— v. rarius confertim 2-ostiolata, ostiolum hemisphaerico-mamillare, centro mamillula praeditum, concolor v. demum in centro nigricans et ibidem annulo naniore depresso cinctum; apothecia pro quovis ostiolo commune 2—5, integre nigra, incomplete connata; sporae in ascis 6—8-nae, hyalinae, fusiformi-ellipsoideae, 80—85 μ longae et circ. 20 μ latae, 6—8-loculares. — Habitu ad A. conicum accedit, sed stromata longe majora, ostiola non ferruginea et sporae omnino aliae. — Verr. Cub. 143 (Astrothelium diplocarpoides Nyl. in Flora 1876, p. 365, sine char.).

6. Heufleria.

Heufleria Trev. Syn. Trypeth. p. 23.

1. **H. subvariata** Müll. Arg.; thallus olivaceo-flavicans, tenuis, subrugulosus, margine effusus; stromata cum thallo concolora, intus alba, hemisphaerica, 1 mm lata, simplicia rariuscula 1-stomatica et 2—3-carpica, ostiolo apicali communi nigro vix emergente sine annulo decolorato cingente, longe saepius 2 v. plura connata et verrucas paullo irregulares saepe tortuoso-subinaequales ad ostiola saepe nonnihil depressas formantia; apothecia pro quoque ostiolo 2—3, superne convergentia, ovoidea, modice in collum attenuata, inter se discreta, undique nigra; nucleus pallidus; sporae in ascis 2—1-seriales, hyalinae, fusiformi-ellipsoideae, 24—27 μ longae et 10—13 μ latae, (2-) 6-loculares, loculi non terminales 2—3-locellati. — Species in genere valde distincta, a Trypethelio variato Nyl. Prodr. Nov. Gran. p. 579, verisimiliter etiam ad Heufleriam ducendo, a me non viso, jam sporis fere duplo minoribus, thalli colore et ostiolis cicatricosis recedit. — Verr. Cub. 164 (Trypethelium subvariatum Nyl. in Flora 1876. p. 365, sine char.), 165 (sine spor.) et 185.

2. **H. purpurascens** Müll. Arg.; fere omnino cum Heufleria praetervisa Müll. Arg. (s. Astrothelio sepulto Montg. pr. p.) convenit, sed stromata e cinereo-obscuro purpurascentia (nec ochracea), et thallus etiam demum distincte purpurascens; apothecia ut in comparata specie, sed sporae

in omnibus (numerosis) examinatis constanter omnino deerant, at affinitas naturalis clare apparet. Apothecia pro quoque ostiolo 1—4, nigra, satis longicolla. — Verr. Cub. 166. b.

3. **H. sepulta** Trev. Syn. Tryp. p. 23; Astrothelium sepultum Montgn. in Ann. Sc. nat. 1843, p. 74. — Hujus perithecia sunt brevicollia, i. e. non profundissime defossa et valde longicollia ut in H. defossa Müll. Arg., et sporae maximae, 130—210 μ longae, circ. 25—35 μ latae, in ascis tantum 2-nae aut geminae et 1—2 rudimentariis adjunctae. — In Guyana gallica: Leprieur (e specim. a cl. Montg. inscripto), et in Cuba: Verr. Cub. 147, II. 607 (pulchre).

4. **H. consimilis** Müll. Arg.; thallus fulvescenti-pallidus, tenuis, laevigatus, margine effusus; stromata $^3/_4$—1 mm lata, depresso-conica, basi sensim in thallum abeuntia, concolora, apice tamen circa ostiolum commune nigrum haud emergens v. paullo depressum latiusculum demum $^1/_3$—$^1/_2$ mm latum decolorato-albescentia v. demum tota albescentia, saepe simplicia et monostomatica, hinc inde duplicia triplicia v. etiam seriatim confluentia, simplicia intus vulgo dicarpica; apothecia conniventia, undique nigra; asci 2-spori; sporae hyalinae, circ. 110 μ longae, 35—40 μ latae, valde pachydermeae, circ. 10—12-loculares, loculi transversim subcubico- 3—5-locellati. — Extus Bathelium sphaerioides (Montg.) Trev. simulat, sed ostiola latiora, sporae valde pachydermeae et latiores et apothecia pro quoque ostiolo non solitaria. Affinitate ad Heufleriam diplocarpam, sc. Astrothelium diplocarpum Nyl. Prodr. Nov. Gran. p. 129 accedit. — E. miscell. segregata, in collectionibus non edita.

7. Parmentaria.

Parmentaria Fée Meth. p. 24. t. 1. fig. 14, Ess. p. 70 et Suppl. p. 67. t. 41 (cum sporis); Pyrenastrum Tuck. Gen. p. 276 (non Eschw., sporae in speciebus Eschweil. simpliciter 4-loculares sunt); Heufleridium Müll. Arg. L. B. n. 592; Verrucariae sp. Nyl. Prodr. Nov. Gran. p. 116 (falsa indicatione auctoris). — Ad hoc genus dein e characteribus datis etiam ducendum videtur: Plagiothelium Stirt. Addit. to the Lichenfl. of Queensland p. 75 (1881).

P. astroidea Fée Meth. p. 76. t. 1. fig. 14, Ess. p. 70; Verrucaria astroidea Nyl. Prodr. Nov. Granat. p. 116 (non Krplh. Lich. Warm. n. 132); Verrucaria aspistea v. astroidea Leight. Ceyl. p. 184 n. 188; Pyrenastrum americanum Spreng. Syst. Veg.; Pyrenastrum astroideum Tuck. Gen. p. 277; Heufleridium pentagastricum Müll. Arg. L. B. n. 592. — Lichen latissime distributus. — Verr. Cub. 137, 139 (Astrothelium pyrenastroides Nyl. in Flora 1876. p. 365, sine char.), 142 (mixta cum aliis, sporis destitutis).

8. Pyrenastrum.

Pyrenastrum Eschw. Syst. Lich. p. 16. fig. 15 (1824), non Tuck.

1. **P. cubanum** Müll. Arg.; thallus flavescenti-v. olivaceo-pallidus, tenuis, nigro-limitatus; stromata depresso-hemisphaerica, majuscula, $1\frac{1}{2}$—$1\frac{2}{3}$ mm. lata v. confluentia, duplicia et triplicia, simplicia pericentrice 4—10-carpa, apice depresso in ostiolum mamillare emergens aurantiaco-fuscum v. demum nigricans abeuntia; apothecia longicolla, valde inclinata, fusco-nigra, superne plus minusve inter se connata; asci 8-spori; sporae imbricatim 1-seriales, fuscae, oblongato-ellipsoideae, 4-loculares, circ. 18—24 μ longae et 8—10 μ latae. — Proximum guyanensi et brasiliensi Pyrenastro septicollari Eschw., sed apothecia et verrucae majores, hae altius emersae et thallus pallidior, sabflavicans. Non parum ludit thallo plus minusve flavescente, verrucis varie cenfluentibus et numero apotheciorum cujusvis verrucae. — Verr. Cub. 136, 138a (Astrothelium cubanum Nyl. in Flora 1876. p. 365, sine char.), 186, II {677, 678}.

2. **P. cryptothelium** Müll. Arg.; thallus flavescenti-olivaceus, crassus, demum areolatim ruptus, superficie laevigatus: stromata leviter emergentia, circ. 3—6-carpica, vertice declorato-fuscidula, confertim 3—6-stomatica v. etiam confluentim monostomatica; apothecia nigra, conniventia, inter se plus minusve connata, tecta; sporae fuscae, 4-loculares, in ascis imbricatim 1-seriales, 28—35 μ longae et 13—14 μ latae. — A P. cubano differt sporis fere duplo majoribus, thallo crasso et apotheciis demum non nudato-perspicuis. Affine videtur Pyrenastro clandestino, sc. Astrothelio clandestino Nyl. (a me non viso), sed thallus alius. —Verr. Cub. 140 (Astrothelium cryptothelium Nyl. l. c. sine char.).

9. Lithothelium.

Thallus crustaceus, amorphus; gonidia chroolepoidea; apothecia in stromate communi apice confertim pluriostiolato v. confluentim 1-ostiolato coadunata (inter se distincta), angiocarpica, convergentia, supra in collum attenuata; paraphyses capillares; sporae hyalinae, transversim divisae, loculi cylindrici. — Est quasi Sagedia Körb. composita. — Spermogonia plurinucleata, »spermatia« tenuissime bacillaria, elongata, leviter sigmoidea.

L. cubanum Müll. Arg.; thallus tenuissimus, cum saxo conferruminatus, laevigatus, albus v. flavescenti-albus; stromata 1—$1\frac{3}{4}$ mm. lata, pro $\frac{2}{3}$ altitudinis in foveolis saxi innata, parte emergente depresso-conica, regularia, vertice subdepresso confertim 3—6-ostiolato leviter mamillaria, extus nigra, intus tota fusca v. nigro-fusca, minus tamen atrata quam ipsa perithecia quae vulgo 2—6 in quoque stromate, subperipherice sita aut et unum in centro, integre nigra, globosa, apice in collum longum abeuntia; nuclei albi; paraphyses firme capillares et longae; asci late lineares; sporae in ascis imbricatim 1-seriales, oblongato-ellipsoideae, demum

utrinque acutiusculae, 4-loculares; hyphidia circ. 20 μ longa et tantum 1 μ lata, varie sigmoidea, incurva aut subhamata. — Ad saxa calcarea: II, 612.

Subtrib. II. Pleurothelieae.

Thallus crustaceus. Apothecia simplicia; perithecium decurvum aut declinatum aut decumbens, in thallo obliquum, non erectum; ostiolum unicum sublaterale. — Nonnullae a Pyrenulis et Anthracotheciis caute distinguenda sunt.

10. Plagiotrema.

Thallus crustaceus, amorphus; gonidia (depauperato-) chroolepoidea; apothecia angiocarpica, simplicia, incurvo-obliqua, latere collo aparientia; paraphyses connexae; sporae hyalinae, transversim divisae, loculi sphaeroideo-lenticulares (ut in Trypetheliis et Pseudopyrenulis).

P. cubanum Müll. Arg.; thallus argillaceo- v. albido-pallens, tenuissimus, demum subevanescens, margine effusus; apothecia $^2/_3$—$^3/_4$ mm. lata, hemisphaerica sed leviter irregularia, nigra, nuda, opaca, infra verticem lateraliter collo breviusculo crasso aperientia, basi valde attenuata, attamen completa, superne incrassata, cavitas perithecii valde inclinata; asci biseriatim 8-spori; sporae 26—30 μ longae, 6—8 μ latae, elongato-ellipsoideae, subgloboso -4-loculares. — Primo visu Arthopyreniam simulat, sed apertura apothecii non ad verticem sita et sporae omnino ut in majore parte Trypethelii specierum. — Verr. Cub. 62, 65.

11. Pleurothelium.

Thallus crustaceus, undique amorphus; gonidia depauperato-chroolepoidea; apothecia angiocarpica, simplicia, longicolla, inclinata aut subrepentia, in ostiolum (decoloratum) laterale abeuntia; paraphyses connexae; sporae fuscae, parenchymaticae. — Characteres ut in Parathelio sed sporae parenchymaticae ut in Anthracotheciis.

1. **P. inclinatum** Müll. Arg.; thallus pallido- v. subolivaceo-flavicans, tenuis, laevis, margine subeffusus; apothecia ^{7}—$^9/_{10}$ mm. lata, primum immersa et omnino tecta, mox dein semiimmersa et nuda, nigra, fere erecta aut modice incurvo-inclinata, apice foveolata, in foveola albida; perithecium integre nigrum; sporae in ascis irregulariter 1-seriales, 8-nae, 40—80 μ longae et 15—28 μ latae, seriebus transversis circ. 8—10 plurilocellatae. — Pyrenulam aut Anthracothecium simulat, praesertim huic generi proxime accedit, sed ostiolum apotheciorum emergentium distincte laterale s. subapicale est at hic character in apotheciis magis emersis aut subvetustis et latius apertis haud raro evanescit. Apothecia mox distincte nudiora et dein erectiora et sporae duplo majores quam in subsimili P. dissimulante. — Verr. Cub. 28, 83, 213 pr. p.

2. **P. dissimulans** Müll. Arg.; thallus olivaceo-flavicans, tenuis, laevigatus, margine subeffusus; apothecia primum immersa et tecta, dein circ.

triente emergentia et superne parte dorsali nudata et atra, incurvo-globosa (latere dorsali ante ostiolum saepe fissa), ^{6}—$^{7}/_{10}$ mm. lata, numerosa saepeque nonnihil gregatim conferta, lateraliter late aperientia; ostiolum grossum, decolorato-subcarneum, demum evanescens; perithecium integre nigrum; sporae in ascis 8-nae, 1-seriales, 35—42 μ longae et 14—18 μ latae, multilocellosae. — Anthracothecium libricolum primo intuitu simulans. — Verr. Cub. 213 pr. p.

3. **P. salvatum** Müll. Arg.; thallus olivaceus, tenuis, laevis, nigro-limitatus; apothecia thallino-corticata, leviter emergentia, ob situm fere horizontalem apothecii oblongata, $^{7}/_{10}$ mm. longa, ad marginem extremitatis in ostiolum mamillare decolorato-pallidum in centro fuscum abeuntia, longicolla, ad partem crassiorem nucleigerum demum dorso fere denudata, ad angustiorem omnino tecta; paraphyses tenaciter cohaerentes; asci lineares, imbricatim 1-serialiter 6—8-spori; sporae 28—33 μ longae, 14—16 μ latae, oblongato-ellipsoideae aut obovoideae, 8-loculares, loculi 2—3-locellati. — Lichen insigniter distinctus, prima fronte formam parvulam simulans Pyrenulae nitidae. Ostiola ob collum tectum a stromate ambiente leviter sed vulgo distincte remota apparent et apothecia parvula Pseudopyrenulae porinoidis bene simulant. — In Cuba, e Miscellan. Wrightianis segregata, parce lecta et in collect. non edita.

12. Parathelium.

Parathelium Nyl. in Bot. Zeit. 1862, p. 279, et in Prodr. Nov. Gran. p. 125 pr. p. Genus, sensu hic admisso, sporas Pyrenularum offert et altera species Nylanderiana, sc. Parathelium polysemum, exclusa est.

P. emergens; thallus albus, tenuis, farinulentus, margine linea nigra cinctus; apothecium in stromate (s. verruca thallina) obsoleto vix emergente prostratum, nigrum, pyriforme, integrum, cum collo elongato $^{9}/_{10}$—1 mm. longum, parte latiore nucleigera mox latere superiore denudato-perspicuum, collari tectum et ostiolari quasi distante iterum perspicuum, ostiolum nigrum, leviter emergens, mamillare; paraphyses connexae; asci lineares, 1-seriatim 4-spori; sporae (initiales 8, sed evolutae regulariter 4) 55—65 μ longae, 15—18 μ latae, fusiformi-ellipsoideae, 8—10-loculares. — Lichen valde distinctus. Primo intuitu nudique apothecia inaequalia geminatim approximata apparent, alterum $^{1}/_{2}$ mm. latum, alterum multo minus, intervallo constante separata, sed re vera majus eorum est pars latior nucleigera, minus autem pars ostiolaris unius ejusdemque apothecii. — Verr. Cub. 15 (Parathelium emergens Nyl. in Flora 1876, p. 365, sine charact.).

13. Pleurotrema.

Thallus crustaceus, undique amorphus; gonidia depauperato-chroolepoidea; apothecia angiocarpica, simplicia, incurvo-obliqua, latere collo aperientia; paraphyses laxe saltem inferne connexae; sporae hyalinae, transversim recte septatae.

P. inspersum Müll. Arg.; thallus argillaceo-pallidus, tenuis, laevigatus, margine effusus; apothecia copiose thallo inspersa, solitaria et hinc inde 2—3 irregulariter confluentia, nigra, subnuda, decumbenti-incurva, longiora quam lata, $1/2$—$2/3$ mm. diametro longiore aequantia, ellipsoideo-hemisphaerica; paraphyses laxe connexae; asci lineares, 1-serialiter 8-spori; sporae 22—26 μ longae, 8 μ latae, elongato-ellipsoideae, utrinque acutiusculae, medio 1-septatae. — Haud dissimile Pleurotremati polysemo, sc. Parathelio polysemo Nyl. Prodr. Nov. Gran. p. 126, sed sporae 2-loculares. — Verr. Cub. 123.

Subtribuum series II. Pyrenuleae orthostomaticae.

Perithecia in sectione axili recta, in ostiolum rectum et erectum abeuntia.

Subtrib. III. Trypethelieae.

Thallus crustaceus, apothecia composita, sc. perithecia plura in verruca thallina s. stromate vulgo discolore v. saltem in thalli portiunculis colore aut forma distinctis exclusive disposita, in stromatibus quoad superficiem perpendicularia et recta et omnia ostiolo distincto aperientia, ostiola sparsa.

14. Trypethelium.

Trypethelium Trevis. Syn. Tryp. p. 19.

Trypethelium Spreng. Anleit. z. Kenntn. d. Gewächse I, p. 350 (1802), Ach. Univ. p. 58 pr. p. et Syn. p. 104 pr. p.; Nyl. Pyrenoc. p. 71, pr. p.; Bathelium Ach. Meth. p. 111 (1803). Coenoicia Trev. Syn. Tryp. p. 22 quoad charact., non syn.

Sect. 1. **Bathelium** Müll. Arg.

Genus Bathelium Ach. Meth. p. 111 (non Mass. et Trev.).

Sporae 4-loculares.

1. **T. scorizum**; thallus carneo- v. fuscescenti-pallidus, crassus, continuus et laevis, stromatibus valde irregulariter lineari-elongatis et subanastomosantibus peragratus; stromata e cinereo mox rufescentia, paullo immersa, plana, subrimosa et scabridula, intus demum subconcolora aut pallidiora, apothecia subduplice et triplice serie disposita gerentia; apothecia nigra, opaca, integra, superne connata, evoluta hemisphaerico-emergentia, $4/10$—$6/10$ mm. lata, apice ostiolo annulari-depresso ornata; asci subbiseriatim 8-spori; sporae hyalinae, elongato-ellipsoideae, 4-loculares, circ. 25 μ longae et 9—10 μ latae. — Juxta magis microcarpum T. mastoideum Ach. locandum est, sed adhuc e specim. Féeanis statuendum remanet an hoc a genuino T. scoria Fée Tryp. t. 15, fig. 1 (non Nyl. Pyrenoc.) vere sit diversum. — Verr. Cub. 166[a] (Trypethelium scorizum Nyl. in Flora 1876, p. 365, sine charact.).

2. **T. infuscatulum**; thallus pallidus, tenuissimus, laevis; stromata nigro-fusca, opaca, sublineari-oblongata, angulosa, anastomosantia, leviter v.

non emersa, supra quasi tonso-plana, intus pallidiora, polycarpica; apothecia nigra, integra, parte inferiore tenuia, superne crassiora saepeque partim connata v. superne interstitiis parvis pallidioribus aut subfuscis segregata, media altitudine $^7/_{20}$ mm. lata; ostiola superficiem stromatis attingentia et circa punctulum fuscum annulo pallido $^1/_{10}$ mm. lato cincta; paraphyses laxe connexae; asci irregulariter biseriatim 8-spori; sporae 27—30 μ longae, 10 μ latae, 4-loculares. — Ab affini T. mastoideo Ach. differt stromatibus planis, intus non flavis, apotheciis minoribus et immersis, albido-oculatis et sporis majoribus. — Verr. Cub. 175 (Trypethelium infuscatulum Nyl. l. c. sine charact.).

3. **T. mastoideum** Ach. Lich. Univ. p. 307, Syn. p. 105; Bathelium mastoideum Ach. Meth. p. 105; T. Carolinianum Tuck. Suppl. p. 429; T. scoria Nyl. Pyrenoc. p. 74 (excl. syn.); thallus tenuissimus, fuscescens aut e cinereo aut olivaceo v. flavido pallidus, nigro-limitatus; stromata fusca, circ. $1^1/_2$—$2^1/_2$ mm. lata, ambitu irregulariter angulosa saepeque paullo anastomosantia, convexa, gibboso-inaequalia, demum peritheciis gibboso-prominulis imove nudato-emersis rudefacta, tantum strato corticali tenui obscurata, intus laete flava v. demum vetustate e flavido-cinerascentia v. -nigrescentia; paraphyses trabeculatim connexae; asci 8-spori; sporae hyalinae, oblongo-ellipsoideae, 4-loculares, 18—22 μ longae, 7—8 μ latae. — Etiam in specim. hb. Achar. stromata intus pro parte laete flava sunt et quoad ambitum, crassitiem et numerum apotheciorum similiter valde ludunt. — Verr. Cub. 167, 168, 224^b, et II {587, 597}, et prope Rio de Janeiro: Glaziou, in Nova Granata: Lindig n. 27, 29, prope Orizabam in Mexico: Fred. Müller, et in parte austr. Amer. sept.: Ravenell et alii (a cl. Tuck comm.: Tryp. Carolinianum), et in cortice Crotonis Cascarillae; in Guinea (vidi specim. orig. Ach.).

T. mastoideum β macerum Müll. Arg.; stromata plus minusve depauperata, oligocarpa et magis tenuia et apothecia pro parte solitaria aut subsolitaria. — Haec var. a T. Kunzei differt colore thalli, et a formis maceris T. catervarii stromatibus intus flavis et ab utroque apotheciis minus obtectis denique magis emersis. — Verr. Cub. 153, 161, 224, 224^c (absque sporis), II, 598.

4. **T. Kunzei** Fée Monogr. Tryp. p. 36, t. 15, fig. 3 (fide specim. arciorig.: T. aurantiaci Kz. sched. in hb. lips.); Verrucaria heterochroa Montg. 3ème Centurie pl. crypt. in Ann. Sc. nat. 1843, p. 60 et Syll. p. 370; Nyl. Pyrenoc. p. 52 (spec. notissima); Verrucaria myriocarpa Zenk. in Goebel Pharmac. Waarenk. I, p. 132, t. 15, fig. 9 (lapsu sub Verrucaria myriococca, ex ipso Zenk. l. c. p. 184), fide specim. orig. delin. ex hb. Zenk. (sed excl. syn. Féeano). — Specimina minus evoluta apothecia offerunt multo, quam vulgo, minora, sed talia etiam in bene evolutis simul immixta occurrunt. — Verr. Cub. 160^a, 226, 226^b et ^{c}, II {589, 590, 591, 592, 595}.

5. **T. catervarium** Tuck. Gen. p. 260; Verrucaria catervaria Fée Ess. p. 90, t. 22, fig. 1.

Eximie varians. Stromata primum non albida, sed pallide ferrugineo-fuscescentia, dein decoloranti-pallida, latiora aut angustiora, interdum linearia, varie elongata, aut tantum annulum angustum pallidum circa apothecia formantia; apotheciorum ostiola minute punctiformia, sed ipsa apothecia interdum magis desupra visibilia et tum magnitudine ut in T. myriocarpo, at tantum velato-subnudata. — Verr. Cub. 159, 160[d], 179, 227, 228, 230, 232, 233[b], et II {570, 573, 574}.

T. catervarium β rufescens Müll. Arg.; thallus rufescenti-obscuratus. — II, 576.

6. **T. myriocarpum** Müll. Arg.; Pyrenula myriocarpa Fée Ess. p. 74, t. 21, fig. 2 et Suppl. p. 78 (excl. syn. Zenk.); thallus flavescenti-ochraceus, tenuis, effusus, parte fertili in stromata tenuia at destincte tumido-emergentia decolorato-pallidiora, angulosa saepiusque varie multiformi-elongata et anastomosantia evolutus; apothecia in stromatibus pluriserialia, primum obtecto-immersa, fere $^2/_{10}$ mm. lata, dein late denudata, sed non emergentia, desupra visa saepe paullo longiora quam lata, nigra, centro grisea, completa, basi valde tenuia, superne incrassata et multoties quam basi crassiora; sporae in ascis 8-nae, 2-seriales, hyalinae, elongato-ellipsoideae, 4-loculares, circ. 22—25 μ longae et 9—11 μ latae. — Thalli color ut in T. Kunzei, stromata ut in T. catervario, sed apothecia mox superne late denudata et superne insigniter pachydermea. — Verr. Cub. 160[c].

7. **T. polychroum** Müll. Arg; thallus crassiusculus, laevis et rugosus, flavescenti-olivaceus, dein sensim in aurantiacum abiens; stromata leviter tantum emergentia, planiuscula, irregulariter angulosa et varie elongata, hinc inde anastomosantia, pallide fulva, dein aurantiaco-pallida, juniora ostiolis copiosis nigris exiguis ornata, dein parte fertili undique plus minusve nigrefacta; apothecia omnino immersa, demum late denudato-aperta, $^3/_4$ mm. lata, integra, crasse nigra; sporae in ascis biseriatim 8-nae, hyalinae, 4-loculares, elongato-ovoideae, 27—32 μ longae et 12—13 μ latae. — Planta junior a T. catervario extus vix nisi thallo crasso et stromatibus fulvescentibus distingui potest, sed bene evoluta est macrocarpa et sporae caeterum sunt multo majores. Ad T. Kunzei accedit. — Verr. Cub. 178.

8. **T. ochroleucum** Nyl. in Flora 1869, p. 126; Verrucaria ochroleuca Eschw. Bras. p. 135 (1828); Trypethelium euporum Krplh. Lich. Glaz. p. 84. Stromata latiuscula, irregularia, valde polycarpica, crassiuscula, ambitu basi arcte constricto-limitata; apothecia sub cortice stromatis distinctius prominentia et dein paullo majora apparentia; stromata intus nigra v. hinc inde etiam pallidiora, extus semper pallide flavicantia. — In Brasilia prope Caytété: Martius (orig. Eschw.), prope Rio de Janeiro:

Glaziou (orig. Krplh.), et dein in Cuba: C. Wright Verr. Cub. 158 pr. p.; 223; II {565, 567, 608}.

T. ochroleucum β effusum; stromata latiuscula ut in forma primaria speciei, sed magis tenuia et margine effuso-attenuata; ostiola paullo minora ut in var. pallescente. — Etiam in hac var. stromata intus colore ludunt, intus inferne undique nigrescunt aut ibidem undique albida aut subalbida occurrunt. — II {566, 568}.

T. ochroleucum pallescens; Trypethelium pallescens Fée Monogr. Tryp. p. 31, t. 13, fig. 3; stromata pulvinuliformia, depresso-hemisphaerica, ambitu suborbicularia v. modice oblongato-irregularia, intus nigrescentia; ostiola minuta. — Prope Rio de Janeiro: Glaziou, prope Bahiam: Salzm., in Guyana gallica: Leprieur n. 457, 467, in Nova Granata: Lindig n. 2663, in Texas: Hall, et dein in Cuba: C. Wright Verr. Cub. 158 pr. p.

T. ochroleucum δ depauperatum; apothecia subseriatim et glomerulatim disposita; stromata tenuia v. fere indistincta, quam in praecedentibus minus polycarpica et hinc inde apothecia partim ternata, geminata et solitaria ferentia; ostiola parva. — Reliquae caeterum omnia conveniunt. II {571, 572}.

9. **T. papillosum** Ach. Syn. p. 104, Fée Monogr. Tryp. p. 26, t. 12, fig. 3; T. Leprieurianum Montg. in Ann. Sc. nat. 1843, p. 70, t. 2, fig. 2. Prominentiae circa ostiola nigra minuta hemisphaerico-annuliformes nunc concolores, nunc distincte albiores. Sporae circ. 20—27 μ longae et 8—9 μ latae, 4-loculares, in ascis 8-nae. — Stromata peritheciis confluentibus intus nigrata sunt. — Planta nostra cum descriptione Féeana (l. c.) secundum specim. Ach. redacta ad amussim convenit et insuper cum specim. orig. Ach. a me ipso recentissime comparata optime convenit. Idem est Trypethelium porosum Ach. Syn. p. 106 (fide specim. hb. Ach.) papillis vulgo saltem pro parte obsoletis, hinc inde tamen distinctis. — Ab hoc omnino differt Trypethelium porosum Nyl., cui adscribuntur sporae parenchymaticae. — Cuba: C. Wright: II {555, 556, 558 (vetustum)}, et in Guyana gallica: Leprieur n. 28 (fid. specim. Montg.).

10. **T. ferrugineum** Müll. Arg.; thallus ochraceo-ferrugineus, tenuis, laevis, zona nigricante limitatus; stromata circ. 1 mm. lata saepeque dimidio longiora quam lata, convexa, laevia, cum thallo omnino concolora, minute sparsim pluriostiolata; ostiola minute punctiformia et subvelata, nigra, demum majora et nigrescentia, non emersa, hinc inde in apice stromatis subconfluentia; perithecia nigra, integra et inter se confluentia, unde stromata intus subnigra; sporae in ascis 8-nae, 2-seriales, hyalinae, cylindrico-obovoideae, 4-loculares, circ. 20 μ longae et 9 μ latae. — Quoad formam partium ad T. ochroleucum γ pallescens accedens, sed omnes partes aliter coloratae sunt, et a T. Kunzei differt thallo intensius colorato et stromatibus multo majoribus. — Verr. Cub. 157 pr. p., et II {593, 594}.

T. ferrugineum β inornatum; thallus et stromata pallide fuscescenti-oli-

vacea v. hinc inde, praesertim in apice stromatum, aurantiaca aut subferrugineo-fulva. — Verr. Cub. 157 pr. p.

11. **T. tropicum**; Verrucaria tropica Ach. Univ. p. 278; Pseudopyrenula tropica Müll. Arg. L. B. n. 602; Verrucaria Gaudichaudii Fée Ess. p. 87, t. 22, fig. 4. — Est Trypethelium (jam cel. Ach. l. c. affinitatem cum T. mastoideo suo agnovit) sed stromata fuscodecolorata, more T. catervarii, varie elongata et subanastomosantia nonnisi statu juniore agnoscenda sunt deinque vulgo omnino v. fere omnino evanescunt, nec nisi situ plus minusve seriali apotheciorum indigitantur. Structura interna caeterum, paraphyses trabeculatim connexae et sporae bene cum genere Trypethelio conveniunt. — In tropicis et subtropicis latissime distributum est et in coll. Wright sub Verr. Cub. 210, a, b, c, et II {17, 639} editum fuit.

Sect. 2. **Eutrypethelium.**

Genus Trypethelium Spreng. Anleit. z. Kenntn. d. Gewächse p. 350. Sporae fusiformes, 10—16-loculares.

12. **T. Eluteriae** Spreng. Anleit. z. Kenntn. d. Gewächse p. 351; Trypethelium Sprengelii Ach. Lich. Univ. p. 306, Fée Ess. p. 65, t. 19, fig. 1. — Verr. Cub. 154, 155 pr. p., 155^{b}, 156, 177^{d,e}; II {577, 578, 579}.

T. Eluteriae v. citrinum (Eschw.) Müll. Arg. — Verr. Cub. 177^{a,b,c}, II, 586.

T. Eluteriae v. truncatum; stromata saepe magis confluentia, supra nigrofuscata et obliterando truncato-planiuscula, intus flava v. demum decolorata. Sporae non recedunt. — Ad hanc varietatem ex ipso specim. Ach. pertinet Trypethelium conglobatum Ach. Syn. p. 105, etiamsi specimin. Ach. fere omnino decompositum et sporis destitutum sit. — II, 585.

T. Eluteriae v. inaequale; Trypethelium inaequale Fée Monogr. Tryp. p. 30, t. 13, fig. 2 et Ess. Suppl. p. 59; stromata quam in forma normali saepius magis oblongata saepeque seriatim confluentia, series subparallelae. — Sporae non recedunt. — II, 583.

13. **T. ornatum** Müll. Arg.; thallus cum epidermide laevis, flavescentipallidus, haud zonato-cinctus; stromata 1—1$^{1}/_{3}$ mm. lata, hemisphaerica, sat regularia, discreta v. hinc inde geminatim v. ternatim confluentia, intus obscure flava, extus nigrescenti-cinerea, apice mamillis 1—4 nano-hemisphaericis aurantiaco-albidis modice prominulis $^{2}/_{5}$ mm. et ultra latis discolori-ornata, mamillae in centro ostiolo punctiformi ex aurantiaco nigricante praeditae; apothecia cujusvis verrucae s. stromatis tantum 1—4, $^{1}/_{3}$—$^{1}/_{2}$ mm. lata; paraphyses connexae; sporae in ascis 8-nae, hyalinae, circ. 62 μ longae et 12 μ latae, fusiformes, 14—17-loculares. — Affine T. Eluteriae. — II, 557.

14. **T. leprosum** Müll. Arg.; thallus flavescenti-pallidus, e laevi mox leproso-subpulverulentus, non cincto-limitatus; stromata circ. 1$^{1}/_{2}$ mm. lata, hinc inde confluentia, hemisphaerica, basi paullo dilatata, rimuloso-

et porino-aperientia, valide corticato-vestita et subpulveracea, cum thallo concolora, intus albida, 1—3(—5) ostiolata; ostiola latiuscula, sicca depressa, nigra, sed plus minusve corticato-vestita saepeque rimoso-confluentia; perithecia nigra, paullo altiora quam lata, integra; paraphyses connexae; asci 8-spori; sporae in ascis ut in genere mos est biseriales, hyalinae, 11—13-loculares. — Ab affini T. Eluteriae differt stromatibus basi minus arcte limitatis, oligocarpicis et intus aliter coloratis et insuper thalli et stromatum superficie. — Verr. Cub. 155 pr. p.

15. Bathelium.

Bathelium Trev. Syn. gen. Tryp. p. 21 in Flora 1861, Jan. (exclus. syn. Ach.). Meristosporum Mass. Esam. Compar. p. 46 (Jan. 1861). — Bathelium Ach. Meth. p. 111 primitivum, in B. mastoideum Ach. l. c. conditum, idem est ac Trypethelium Spreng. & Ach., et species ipsa eadem est ac Trypethelium Carolinianum Tuck., stromatibus saepius depauperatis, intus intense flavis. — Quum Bathelium Trev. dein et Meristosporum Mass. aetate aequalia sint, prius, brevius et jam apud Acharium adhibitum anteposui.

1. **B. gigantosporum** Müll. Arg.; thallus olivaceo-glaucus, laevis, crebre stromatigerus; stromata hemisphaerica, cum thallo concolora, circ. 1 mm. lata, simplicia et vulgo monocarpica aut varie confluentia, intus alba, apice ostiolo depresso fusco-nigro et margine thallino decolorato-albido cincto praedita; perithecia integre nigra, ovoidea, apice non in collum abeuntia; sporae in ascis geminae, hyalinae, 200 μ et ultra longae et 58 μ et ultra latae, copiose parenchymaticae, loculi in locellos copiosos cubicos divisi. — Habitus satis convenit cum B. megaspermo, sed sporae sunt giganteae, in ascis tantum geminae et ambitu amplae, intus multo crebrius divisae. Ad B. ostendatum (Krplh.) Müll. Arg. Lich. Africae occid. ad 53 etiam accedit, sed verrucae apice minus apertae et sporae longe ampliores. — E miscellan. Wrightian. segregatum, in coll. non editum.

2. **B. megaspermum** Trev. Syn. Tryp. p. 21; Trypethelium megaspermum Montg. 3ème Cent. n. 93 Crypt. exot. in Ann. Sc. nat. 1843; Nyl. Pyrenoc. p. 72. — Verr. Cub. 184, II, 622.

3. **B. phaeomelodes** Müll. Arg.; thallus olivaceo-fuscus, tenuis, laevis; stromata fusco-nigricantia, nano-convexa, irregularia, vulgo oblongata et saepe seriatim confluentia, mono-oligocarpica, simplicia vix $^1/_2$ mm. lata, intus fusco-obscurata, paullo pallidiora quam in superficie; ostiola nigra, punctiformia, parum distincta; perithecia nigra, integra; nucleus hyalinus; paraphyses connexae; asci oblongato-obovoidei, 8-spori; sporae in ascis 2—3-seriales, hyalinae, 26—40 μ longae et 13—15 μ latae, oblongato-ellipsoideae, utrinque late obtusae, 10-loculares, loculi 2-locellati. — Habitu Trypethelium mastoideum pauperulum simulans, sed sporis omnino differt et stromata intus non sunt flava. Affine et quidem valde

affine et simile est benguelensi Bathelio subdiscreto, sc. Trypethelio subdiscreto Nyl. in Flora 1869 p. 70, cujus apothecia et sporae majores sunt. — Verr. Cub. 170 (Trypethelium phaeomelodes Nyl. l. c. p. 365, sine charact.).

16. Bottaria.

Bottaria Mass. Misc. lich. p. 42, 1856; Trev. Syn. Tryp. p. 20.

1. **B. subdisjuncta** Müll. Arg.; thallus olivaceo-flavicans v. -pallens, tenuis, laevis, zona nigrescente limitatus; apothecia et solitaria et varie subseriatim connata, interdum nonnulla aggregata in verruca thallina cingente leviter obtuse emergente et verruca tum stratum circumcirca distinctum formans, crassiuscule velata et impure nigrescentia, apice demum nudato nigra et in foveola exigua ostiolum nigrum mamillare deciduum perexiguum et griseo-marginatum gerentia; perithecium globosum, ^{6}—$^{8}/_{10}$ mm. latum, nigrum, sat tenue, completum, apice sub cortice nonnihil disculiformi-dilatatum; sporae in ascis 8-nae, 70—85 μ longae et 22—27 μ latae, sat crebre parenchymaticae. — Ad genus Anthracothecium valde accedit et habitu quasi Anthracothecium variolosum refert apotheciis magis innatis, magis obtectis et magis confluentibus. — II, 676.

2. **B. cruentata** Müll. Arg.; thallus laetius v. obscurius sanguineus, laevis, tenuis, minutissime pulverulentus, margine effusus; stromata ^{3}—$^{6}/_{5}$ mm. lata, hemisphaerica, sat regularia, basi dilatata, concolora, superne mox denudato-nigra et 1—4-ostiolata, intus cum peritheciis integris nigris connatis nigra; paraphyses capillares, liberae; asci angusti, 8-spori; sporae imbricatim 1-seriales, fuscescentes, 30—40 μ longae, 13—17 μ latae, 6-loculares; loculi, exceptis ultimis, 2—4-locellati. — Similis Stromatothelio cruento Trev. s. Melanothecae cruentae Müll. Arg. sed sporis omnino diversa. — Verr. Cub. 162[a, b] (Trypethelium cruentatum Nyl. l. c, sine charact.).

17. Melanotheca.

Melanotheca Fée Ess. Suppl. p. 70, t. 36, fig. 10 et 14 et t. 41 sub Melanoth. fig. 1—2 (char. emend.); Nyl. Perenoc. p. 69 quoad priorem speciem. — In charact. sporarum Féeano sporae fuscae, in ascis circ. 16 biloculares delineatae fuerunt, quod in tota subclassi Pyrenocarpearum nunquam occurrit, sed sporas 8 quadriloculares auctor evidenter pro 16 bilocularibus interpretavit. — Porothelium Eschw. Syst. Lich. p. 18, fig. 21 (nomen jam antea in Mycologia adhibitum), cujus synonymon est Porodothion Fries Plant. Homon. p. 262, 1825, ob sporas parenchymaticas (Eschw. l. c. fig. 21) non est hujus loci. — Stromatothelium et Chrooicia Trev. Syn. Tryp. et Celothelium Mass. autem idem sunt ac Melanotheca. — Hic insuper observandum est, nomen Melanotheca, e sporis fuscis desumptum (cel. Fée sporas sub nomine thecarum habuit),

minus bonum fereque rejiciendum esse, sed sensu ampliore ad perithecia spectante intelligi potest et absque necessitate mutare nolui.

1. **M. Achariana** Fée l. c. [Trypethelium anomalum Ach. Syn. p. 105, a cl. Fée hic allatum, e specim. orig. Ach. ad Trypethelium platystomum Montg. pertinet]; Trypethelium nudum Fée Ess. Suppl. p. 61, t. 40. fig. 15 (ex specim. Féeano). — Verr. cub. 132 (Verrucaria congregans. Nyl. l. c. sine charact.), 169, 174, 229 a. c. d. II. {599, 600.}

2. **M. foveolata** Müll. Arg.; thallus argillaceo- v. fulvescenti-pallidus, late expansus, tenuissimus, laevigatus, margine linea nigra cinctus; apothecia $^2/_3$ mm. lata, depressiuscula (latiora quam longa), parte emersa nano-hemisphaerica, apice depresso-foveolata (et in foveola albidula), basi completa planiuscula, alia solitaria, alia geminatim aut gregatim confluentia, alia intime altius connata et stroma formantia, ob pelliculam thallinam obtegentem impure nigra v. demum denudata et nigra; paraphyses connexae; sporae 16—18 μ longae et 6—7 μ latae, fuscidulae, lenticulari — 4-loculares. — A M. Achariana statim recedit stromatibus obligocarpicis, saepe in apothecia solitaria quasi solutis, apotheciis paullo majoribus, depressulis, subvelatis et apice foveolato-umbilicatis. — Verr. Cub. 86.

3. **M. arthonioides**; Verrucaria arthonioides Eschw. in Martii Icon. Sel. p. 15, t. 8, fig. 2 et Bras. p. 129; Trypethelium nigritulum Nyl. Prodr. Nov. Gran. p. 127., thallus tenuissimus, fuscidulus, laevigatus, zona angusta nigricante limitatus; stromata 2—4 mm. et ultra longa, saepius paullo longiora quam lata, ambitu vulgo modice irregularia, emergentia, arcte circumscripta, deplanato-convexa, laevia, subnitida et nigra, intus sub strato tenui nigro pallidiora, cinerascentia v. fusco-cinerea, undique peritheciis discretis pallidiora; perithecia numerosa, integra, inferne tenuia et fusco-nigra, apice minute prominula; ostiola nigra, concolora, minute umbilicata; asci biseriatim 8-spori; sporae oblongo-ellipsoideae, 4-loculares, fuscidulae, 13—20 μ longae, 7—8 μ latae. — Ab affini M. Achariana differt stromatibus minus irregularibus, magis et crebrius polycarpicis et apotheciis distincte minoribus. — Verr. Cub. 171, 172, II. 601.

M. arthonioides β grisea, stromata tenuiter griseo-velata, demum pro parte v. fere omnino denudata; ostiola demum saepe minute pallidius annulata. — Reliqua conveniunt. — Verr. Cub. 173ª, 173ᵇ (transiens in formam genuinam speciei), II. 604.

4. **M. aggregata**; Verrucaria aggregata Fée Ess. p. 91; Pyrenula aggregata Fée Suppl. p. 80 (fide specim. Féeani); Trypethelium fuscum Krplh. Lich. Warm. p. 398 n. 137 (fid. specim. orig. ex hb. Warmingii). — Sporae a cl. Krplh. hyalinae descriptae fuerunt (l. c.), at in specim. Warming. viso e hyalino mox fuscas observavi, ut in Lichene cubensi. — Verr. Cub. 229 b., II. 603.

5. **M. Wrightii** Müll. Arg.; thallus pallidus, tenuissimus, laevis, margine

zona fusca limitatus; verrucae 1—$1^1/_2$ mm. latae, ambitu regulariter et irregulariter orbiculares, basi arcte (constricto-) circumscriptae, deplanato-convexae, saepe obtuse v. obsolete foveolato-inaequales, extus nigrae, opacae, intus albae, modice polycarpicae; ostiola minute punctiformia vulgoque paullo emergentia; perithecia ovoidea, integra, subtenuia; asci 8-spori; sporae in ascis imbricatim 1-seriales, fuscae, ellipsoideae, 27—30 μ longae, 13—15 μ latae, utrinque late rotundato-obtusae. — Species sat elegans et valde distincta. Stromata fere ut in neogranatensi Trypethelio phaeothelio Nyl., sed planiora et sporae aliae. — Verr. Cub. 231, II. 679.

6. **M. cruenta** Müll. Arg.; Trypethelium cruentum Montg. Cent. I. pl. cell. exot. n. 30 (in Ann. sc. nat. 1837); Stromatothelium cruentum Trev. Syn. Trypeth. p. 20. — Verr. Cub. 163 (sine spor.), II. 569, II. 595 (Spermogonifera).

18. Tomasellia.

Tomasellia Mass. in Flora 1856, p. 283; Trev. Syn. Tryp. p. 21; Melanotheca Nyl. Pyrenoc. p. 69, pr. p.

1. **T.** (s. **Syngenesorus**) **angulosa** Müll. Arg.; thallus cum epidermide conferruminatus, cinereo-pallidus, tenuissimus, linea nigra valida cinctus; apothecia in stromata convexa circ. 1—$1^1/_2$ mm. lata, ambitu irregulariter lobato- v. crenato-angulosa, nigra et nuda, superficie aequalia aut gibbosula connata; perithecia oblongato-globosa, completa, basi inter se discreta, superne profunde connata; paraphyses laxe reticulatim connexae; asci subuniseriatim 8-spori; sporae hyalinae; subaequaliter 2-loculares, ellipsoideae aut obovoideae, 23—25 μ longae et 8—10 μ latae. — Affinis et similis **T. brasiliensi,** sed tota magis tenella, stromata tenuia et ambitu crenato-angulosa, primo intuitu Arthoniam complanatam referentia. — Verr. Cub. 127.

2. **T.** (s. **Syngenesorus**) **cubana** Müll. Arg.; thallus quasi halonem albidum formans, mox pro parte evanescens et cum epidermide maculam testaceo- v. aurantiaco-pallescentem constituens, margine linea valida nigra limitatus; stromata 1 mm. lata, ambitu obtuse angulosa, plana v. subplana, nigra, polycarpica; apothecia e stromate emergentia, hemisphaerica, novella griseo-velata, in quoque stromate pauca evoluta; perithecium basi late truncata deficiens; paraphyses connexae; asci obovoideo-cylindrici, 8-spori; sporae 16 μ longae et 5—6 μ latae, medio 1-septatae, loculi aequilongi et subaequilati, lateraliter saepe nonnihil lyrato-repandi. — Ab europaea T. arthonioide Mass., ubi thallus aliter coloratus et copiose geographice peragratus, extus vix nisi stromatibus tenuioribus et apotheciis leviter majoribus, minus e stromate emersis, novellis vestitis discerni potest, sed sporae differunt loculis aequilongis nec soleaeformi-inaequalibus. — Verr. Cub. 126.

3. **T.** (s. **Celothelium**) **aciculifera** Müll. Arg.; Melanotheca aciculifera Nyl. Pyrenoc. p. 71 et Prodr. Nov. Granat. p. 126. — Sectio Celothelium Müll. Arg., sc. genus Celothelium Mass. Esam. Compar. p. 51, recognoscitur sporis acicularibus et multiseptatis. — Verr. Cub. 13, II, 645, et in Guyana gallica: Leprieur n. 721.

4. **T.** (s. **Celothelium**) **agminella** Müll. Arg.; thallus maculam subcarneo- v. argillaceo-albidam formans, tenuissimus, laevigatus, margine effusus; apothecia duplicia et simul saepius simplicia, $^2/_{10}$ mm. lata et minora, gregatim conferta et hinc inde confluentia, hemisphaerica et conico-hemisphaerica, nigra, vertice umbilicata; perithecium basi deficiens; sporae in ascis angustis 8-nae, 33—44 μ longae, $1^1/_2$—2 μ latae, curvato-aciculares, 7-septatae. — Affinis est T. aciculiferae, sed tota planta longe gracilior. — Thallus hinc inde juxta greges apotheciorum obsolete decoloratus occurrit ut in Trypethelio catervario. — Verr. Cub. 4 (Melanotheca agminella Nyl. in Flora 1876, p. 365, sine charact.).

Subtrib. IV. Verrucarieae.

Thallus crustaceus; gonidia chroolepoidea; apothecia simplicia; perithecium rectum et erectum, extus haud appendiculatum.

19. Verrucaria.

Verrucaria Trev. Consp. Verr. p. 7; Verrucaria Auct. pr. p.

1. **V. calciseda** DC. Fl. fr. p. 317. — II, 611.

20. Porina.

Porina Müll. Arg. L. B. n. 644; Verrucariae, Porinae, Sagediae Auct. pr. pr., Ophthalmidium Eschw. Syst. p. 18, n. 23, fig. 23 (excl. syn. Ach.); Trev. Syn. Trypeth. p. 18 (e charact. apothecii fortuito ortum); Trypethelii sect. Ophthalmidium Eschw. Bras. p. 155 speciatim ad sect. Euporinam pertinens.

1. **P.** (s. **Euporina**) **mastoidiza** Müll. Arg.; thallus olivaceus, late expansus, margine zona coeruleo-nigricante cinctus, obsolete granulari-rugulosus, nitidulus, demum subdesquamescens; apothecia $^1/_2$—$^2/_3$ mm. lata, depresso-hemisphaerica, basi in thallum dilatato-abeuntia, apice demum leviter depresso-concavo minute fusco- v. rufescenti-ostiolata; perithecium globosum, completum, pallidum; sporae 8-nae, 65—80 μ longae, 12—16 μ latae, utrinque acuminatae, 11—13-septatae. — Hic etiam spectat Lichen a cl. Nyl. in Coll. Lich. Cub. p. 294 sub Verrucaria endochrysea (excl. syn. Montgn.) enumeratus. — Ad P. desquamescentem Fée accedit, sed sporae crassae. — Verr. Cub. 16ª (Verrucaria mastoidiza Nyl. in Flora l. c. sine charact.).

2. **P.** (s. **Euporina**) **rhodostoma** Müll. Arg.; thallus argillaceo-flavicans v. demum argillaceo-subvirens, late effusus, margine determinato non

zonatus, tenuis, tenuissime granuloso-rugulosus; verrucae ^{7}—$^{9}/_{10}$ mm. latae, conico-hemisphaericae, depressulae, basi sensim in thallum abeuntes, concolores, apice cum ostiolo punctiformi v. subumbilicato mox late roseotinctae aut in centro verticis fusco-punctatae; perithecium triente inferiore pallidum v. fere indistinctum, superne amoene roseo- aut rufescenti-fulvum; nucleus fulvescens; sporae in ascis 8-nae, 2-seriales, fusiformes, 65—80 μ longae et 10—12 μ latae, 7—11-septatae, loculi 2 intermedii reliquis longiores. — II, 539.

3. **P.** (s. **Euporina**) **depressula** Müll. Arg.; Verrucaria nucula Nyl. Lich. Husn. p. 22; thallus argillaceo-flavicans, tenuis, margine effusus, minute granularis; apothecia $^{3}/_{4}$—1 mm. lata, depresso-hemisphaerica, concolora, sublaevia, apice nonnihil foveolato-retusa, usque ad ostiolum angustum roseo-rubellum v. demum rufum integre corticata; sporae 8-nae, 50—80 μ longae et 15—20 μ latae, robusto-fusiformes, 7—11-septatae. — A P. rhodostomate, cui prima fronte omnino similis, differt ostiolis multo minoribus, minus roseo-coloratis et apotheciis apice depressis basique magis limitatis. — Corticola, e Miscellan. selecta, in collectionibus haud distributa, et dein in ins. Guadeloupe: Husnot n. 473.

4. **P.** (s. **Euporina**) **plicatula** Müll. Arg.; thallus argillaceo-flavicans v. argillaceo-cinerascens, late expansus, crassiusculus, demum subgloboso-desquamescens, superficie inaequali undique minute plicatulo-rugosus, nitidulus; apothecia innata, extus ostiolo e fusco nigrescente lato subanguloso demum $^{1}/_{2}$ mm. lato haud emergente indicata; perithecium subdepresso-globosum, superne late nigricans, caeterum pallidum; sporae 60—80 μ longae, 13—17 μ latae, valide fusiformes, utrinque acuminatae, 9—13-septatae, loculi intermedii reliquis longiores. — Habitus P. mastoideae, sporae fere P. superioris. — Verr. Cub. 22^{a}, 25 pr. p.

5. **P.** (s. **Euporina**) **glauca** Müll. Arg.; thallus plumbeo-glaucus, instratus, tenuis et laevis, nitidus, demum facile desquamescens; apothecia $^{1}/_{5}$ mm. lata, circiter triente emergentia, nano-subhemisphaerica, concolora, sensim in thallum cingentem abeuntia, vertice demum latiuscule e fulvescente mox nigro-ostiolata; sporae in ascis 8-nae, valde robustae, 80—95 μ longae, 10—20 μ latae, 7—13-septatae. — Thalli colore et sporis distincta, caeterum subsimilis P. mastoideae. — Verr. Cub. 20.

6. **P.** (s. **Euporina**) **gibbosa** Mass. Ric. p. 191. — Verr. Cub. 22^{b,c} (Verrucaria mastoidiza Nyl. in Flora 1876, p. 365, sine charact., pr. p., quoad specimina mea, sed in collect. distrib. ad P. gibbosam, P. mastoidizam et P. mastoidesteram nec non P. mastoideam forte non ubique specimina identica adsunt. — In hac apothecia majuscula, bene emersa, basi arcte circumscripta et apice late nigro-ostiolata sunt.).

7. **P.** (s. **Euporina**) **mastoidestera** Müll. Arg.; thallus olivaceus, crassiusculus, laxiuscule adnatus, bene determinatus, margine non evanescens, nitidulus, demum desquamescens; apothecia 1 mm. lata, nano-hemisphaerica,

crasse corticata, concolora, apice demum late nigro-ostiolata; sporae 8-nae, 50—60 μ longae, 12—13 μ latae, 7-septatae. — Valde affinis P. mastoideae, quacum sporis et ostiolis demum latis nigris convenit, sed differt thallo multo crassiore, sc. usque ad imum marginem distincte crasso et laxe adhaerente. — Verr. Cub. 19 (Verrucaria mastoidestera Nyl. in Flora l. c. sine charact.).

8. **P.** (s. **Euporina**) **mastoidea** Müll. Arg. (non Fée): Verrucaria mastoidea Nyl. Pyren. p. 38. — Speciem hanc sensu clare determinato Nylanderiano recipio, nam Acharius ipse species certe diversas certe coram habuit. Inter specimina hb. Ach. hoc sub nomine etiam forma fulvescenti-decolorata occurrit Porinae Tetracerae (sporae multo angustiores quam in notissima vulgari P. mastoidea, 7-loculares), at haec jam thallo laevigato minus cum descript. Achariana quadrat, et quod dein ad specimen Afzelianum e Siera Leone reportatum (quod mihi e Museo Upsaliensi coram fuit) attinet, hoc sporis gaudet similiter 7-locularibus, angustis, et thallo olivaceo copiose nigro-peragrato et omnino cum Porina interstite (Nyl.) Müll. Arg. confluit. — Porina mastoidea (Nyl.) Müll. Arg. in Collect. Wrightiana sub II, 675 (minus bene evoluta) distributa est, at bene evoluta sed parce inter Miscellan. Wrightiana aderat.

9. **P.** (s. **Euporina**) **nucula** Ach. Syn. p. 112 (ex specim. Ach.): Porophora gilva Zenk. in Goebel Pharm. Waarenk. t. 25, fig. 1 (fide specim. orig. Zenk.); affinis P. nuculiformi Müll. Arg., at distinguitur apotheciis elato-hemisphaericis, magis gracilentis, mundulis, pallidioribus, laetius ostiolatis et thallo valde tenui, minute aut obsolete granuloso; sporae ut in P. nuculiformi. — Specim. orig. hb. Ach. e Guinea offert sporas 48—55 μ longas, 11—13 μ latas, 7-septatas. — Verr. Cub. 23, pr. p., nec non prope Caracas et prope Apiahy in Brasilia.

P. (s. **Euporina**) **nucula** var. **verrucosa** Müll. Arg.: apothecia vertice v. undique subrimuloso-verruculosa. — Sporae in hac var. non visae. — II, 543, et in Brasilia prope Apiahy: Puiggari.

10. **P.** (s. **Euporina**) **pulchella** Müll. Arg.: thallus ochroleuco-pallidus, determinatus, subtenuis, laevis, demum subrugulosus, nitidulus; apothecia $^2/_3$ mm. lata, conico-emergentia, nano-conico-hemisphaerica, concolora, basi sensim in thallum abeuntia, vertice truncato e pallido mox fusco v. fusco-nigrescente leviter impressa et papillam ostiolarem pallidiorem gerentia; perithecium globosum, pallidum, apice fusco-fulvum; sporae in ascis 8-nae, fusiformi-aciculares, circ. 50 μ longae et 4 μ latae, 9—13-septatae. — Affinis P. dolichophorae, s. Verrucariae dolichophorae Nyl. Prodr. Nov. Gran. p. 114 (cui sunt apothecia neutiquam conica, majora et sporae majores) et praesertim Porinae belonosporae s. Verrucariae belonosporae Nyl. l. c., sed apothecia apice alia et sporae minores. — Prima fronte P. mastoideam minutulam simulat, sed ostiola madefacta pallescentia et sporae omnino aliae. — Verr. Cub. 21.

11. **P.** (s. **Euporina**) **Tetracerae** Müll. Arg.; Verrucaria Tetracerae Ach. Meth. p. 121, Univ. p. 280; Verrucaria mastoidea v. Tetracerae Nyl. Pyrenoc. p. 39; Pyrenula Tetracerae Ach. Syn. p. 125 (fide specim. hb. Ach.). — Apothecia sicca in hac specie apice ostiolari nigro-fusca sunt, sed madefacta ibidem fulvescunt et saepe demum superne undique fulvescenti-decolorata sunt ut in variis specim. cubens. et pr. p. etiam in ipso specim. Achariano. Sporae magnitudine et divisione ludunt, 32—55 μ longae et 5—7—9 rariusve et 11-septatae sunt. — Verr. Cub. 16^{b}, $17^{a,b}$, $18^{a,b,c,d}$, et II, 545.

12. **P.** (s. **Euporina**) **variegata** Fée Suppl. p. 75; Verrucaria dissipans Nyl. Coll. Lich. Cub. p. 294. — Verr. Cub. II, 207 (in meo specim. sine sporis), et speciminulum bene evolutum inter Miscellan. lectum.

13. **P.** (s. **Euporina**) **nonaria** Müll. Arg.; thallus olivaceo-cinereus, late expansus, evolutus saepius $^{1}/_{3}$ mm. crassus, superficie aequalis et laevigatus, opacus, demum foliaceo-secedens et fragilis; apothecia $^{4}/_{7}$ mm. lata, depresso-hemisphaerica, concolora, laevia, vertice paullo foveolato-depressa ibique e fusco nigricantia; perithecium fere omnino in thallo crasso immersum, globosum, pallidum, ostiolo nigrescente tectum; nucleus rubellus; sporae in ascis biseriatim 8-nae, fusiformi-subaciculares, 35—45 μ longae et 4—5 μ latae, 9-septatae. — Quasi medium tenens inter rigidam et crassam P. firmulam et P. Tetracerae. — Verr. Cub. 8 (Verrucaria nonaria Nyl. in Flora l. c. sine charact.).

14. **P.** (s. **Euporina**) **firmula** Müll. Arg.; thallus late expansus, olivaceus, nitidulus, $^{1}/_{3}$—$^{2}/_{3}$ mm. crassus, undulato-inaequalis et minute rimulosus, demum a substrato frustuloso-secedens, subtus nigro-fuscus, intus albus; apothecia $^{4}/_{10}$ mm. lata, globosa, subalba, leviter emergentia, in apice prominentiae demum foveolata nigro-ostiolata; nucleus albus; asci imbricatim aut subbiserialiter 8-nae, fusiformes, 20—23 μ longae et $4^{1}/_{2}$—5 μ (sine halone) latae, (3—)5-septatae. — Nulli cognitarum arcte affinis. — Verr. Cub. 7 (Verrucaria firmula Nyl. in Flora l. c. sine charact.).

15. **P.** (s. **Euporina**) **polycarpa** Müll. Arg.; thallus fuscescenti-olivaceus, obscurus, late expansus, crassiusculus, demum desquamescens, apothecia $^{2}/_{3}$ mm. lata, hemisphaerica, concolora, crasse corticata, apice ostiolo haud emergente punctiformi v. demum paullo latius nigrescente ornata, numerosissima, saepe geminatim ternatimque aut glomeratim confluentia; perithecium globosum, completum, superne fuscum, caeterum pallidius; sporae in ascis 8-nae, anguste fusiformes, 22—25 μ longae et $3^{1}/_{2}$—4 μ latae, (5—)7-septatae. — Prope asiaticam Porinam mastoidellam, sc. Verrucariam mastoidellam Nyl. Lich. Kurz. Calcutt. n. 46 locanda est. — Extus P. mastoideam obscuratam, eximie polycarpicam et microstomaticam simulat. — II, 546.

16. **P.** (s. **Euporina**) **haematostoma** Müll. Arg.; thallus olivaceo-virens, late expansus, crassiusculus, laevigatus et sat aequalis, opacus; apothecia

copiosa, prominentiis laevibus cincta, circ. triente hemisphaerico-emergentia, superne nuda, ostiolum ^{25}—$^{28}/_{100}$ mm. latum, sanguineo-fuscum v. madefactum sanguineo-purpureum; perithecium globosum, completum, superne fulvo-rufum, caeterum flavescenti-pallidum; sporae in ascis 8-nae, subbiseriales, tantum 18—32 μ longae et $3^1/_2$—4 μ latae, anguste fusiformes, aequaliter 5—7-septatae. — Nulli nisi P. nanae Fée affinis. — II, 540.

17. P. (s. **Phylloporina**) **epiphylla** Fée Ess. Suppl. p. 75; Müll. Arg. L. B. n. 653. — Foliicola, II {214, 215, 216, 217, J.}.

18. P. (s. **Segestrinula**) **rubicolor** β **rhodoplaca** Müll. Arg. L. B. n. 659. — Foliicola, II, 220.

19. P. (s. **Segestrinula**) **leptospermoides** Müll. Arg. L. B. n. 658. — Foliicola, e Miscellan. segregata, in collect. non distributa nisi aliis forte admixta.

20. P. (s. **Sagediastrum**) **platypoda** Müll. Arg. L. B. n. 664. — Foliicola, II, D. pr. p.

21. P. (s. **Sagediastrum**) **phyllogena** Müll. Arg. L. B. n. 663. — Foliicola, e Miscellaniis segregata, in collect. non data nisi forte aliis immixta.

22. P. (s. **Sagediastrum**) **lamprocarpa** Müll. Arg.; thallus vix discernendus; apothecia conferta, $^3/_{10}$ mm. lata, subdepresso-hemisphaerica, nigra, undique jam ab origine nuda et nitidissima (vulgo cum spermogoniis numerosioribus subtriplo minoribus mixta); perithecium dimidiatum; asci lineares, 1-seriatim 8-spori; sporae 2-loculares, 7—10 μ longae, 2—$2^1/_2$ μ latae, ambitu lineari-ellipsoideae, utrinque obtusae, medio non constrictae. — Similis P. nitidulae, sed sporae parvae et tantum 2-loculares. — Foliicola, II, 203.

23. P. (s. **Sagedia**) **cineriseda** Müll. Arg.; thallus subflavescenti-cinereus, late effusus, tenuis, superficie minutissime inaequalis et rugulosus, opacus; apothecia ^{10}—$^{17}/_{100}$ mm. lata, impure nigra, opaca, hemisphaerica, basi plana; perithecium dimidiatum, basi in majoribus paullo dilatatum; paraphyses liberae, capillares; asci lineares, biseriatim 8-spori; sporae 2-loculares, tantum 9—$10^1/_2$ μ longae, $2^1/_2$—3 μ latae, dactyloideae, medio subdistracto 1-septatae. — Species in hoc genere valde distincta. Apothecia simulant spermogonia. — Verr. Cub. 10 (Verrucaria cineriseda Nyl. in Flora l. c. sine charact.).

24. P. (s. **Sagedia**) **mundula** Müll. Arg.; thallus virens, late expansus, effusus, tenuis, subverniceo-laevigatus et nitidulus, hinc inde maculiformi-evanescens; gonidia discreto-chroolepoidea; apothecia ^{16}—$^{20}/_{100}$ mm. lata, parte emersa majore nano-hemisphaerica, nigra, opaca, inferne thallino-vestita, vertice integra, basi subtus planiuscula, sed perithecium nihilominus completum, undique nigrum, subtus aequicrassum aut tenuius, lateraliter circumcirca producto-dilatatum; paraphyses capillares, liberae; asci cylindrici, imbricatim subuniserialiter 8-spori; sporae 2-loculares, tantum 7—9 μ longae, $2^1/_2$—3 μ latae, elongato-obovoideae. — Habitu et

minutie sporarum ad P. cinerisedam accedit, sed thallus alius et apothecia non dimidiata. — Verr. Cub. 212.

21. Clathroporina.

Clathroporina Müll. Arg. L. B. n. 541.

1. **C. elabens** Müll. Arg.; thallus argillaceo-virens, margine zona subaurantiaca v. fulvescente cinctus, tenuis, minute granulari-inaequalis; apothecia $^3/_4$—$1\,^1/_5$ mm. lata, hemisphaerica, crassius thallino-corticata, undique cum thallo concolora, superficie obsolete granuloso-inaequalia; ostiolum fusco-nigrum, punctiforme, non emergens; perithecium fulvescens, completum, globosum; nucleus albus; sporae in ascis 2-seriatim 8-nae, fusiformi-ellipsoideae, circ. 68 μ longae et 20 μ latae, circ. 10—12-loculares, loculi 2-locellati. — Proxima A. olivacea Müll. Arg. e Nova Hollandia differt thallo laevigato, ostiolis multo latioribus et sporis angustioribus; nostra a C. confini praeter thalli colorem et superficiem jam verrucis apice concoloribus et, si madefacta, ostiolis subnigris recedit. — Apothecia apice mox collabescendo-excavata, sc. mox latiuscule aperta, nucleo deciduo privata, et tum speciem Thelotrematis simulant. — Verr. Cub. 216.

2. **C. confinis** Müll. Arg.; thallus cinereo-virens, effusus, margine tenuissimus et laevis, subverniceus, caeterum creberrime granoso-rugulosus, rugae dein seriatim confluentes et incrassatae, serius intricatae; apothecia $^1/_2$—$^4/_7$ mm. lata, hemisphaerica, thallino-vestita, basi subgranulosa, intus tota carneo-pallida, superne quasi nudato-pallescentia, madefacta ibidem pallide fulva, in vertice ostiolo fusco v. rufo-fusco parvulo praedita; asci biseriatim 8-sporae; sporae 52—65 μ longae, 13—16 μ latae, elliptico-fusiformes, subsigmoideo-curvatae, 10—12-loculares, loculi 2-locellati v. cruciatim 4-locellati, ultimi indivisi et vulgo breviores. — A proxima C. nuculastro Müll. Arg., e Madagascaria, thallo crebre granuloso et demum seriatim incrassato, apotheciis crassius vestitis et magis rotundato-obtusis differt. — Verr. Cub. 23. pr. p.

22. Arthopyrenia.

Arthopyrenia Müll. Arg. L. B. 612. — Sectiones Mesopyrenia et Acrocordia (Müll. Arg. l. c. n. 614, 629), e summa affinitate juxtaponendae sunt et e speciebus nunc numerosioribus notis praesertim ascorum forma, s. situ sporarum in ascis dignoscendae sunt. Sectio Mesopyrenia offert sporas in ascis minus angustis sitas 2—3-seriales aut irregulariter subuniseriales, sectio Acrocórdia autem praedita est ascis tota longitudine aequilatis linearibus, et sporis regulariter v. vix subirregulariter 1-serialibus. — Reliqui characteres ex ambitu loculorum sporarum desumpti nimis vacillantes sunt.

1. **A.** (s. **Euorthopyrenia**) **subantecellens** Müll. Arg.; thallus cinereo-fuscescens, effusus, tenuissimus, mox subindistinctus; apothecia $^3/_{10}$ mm.

lata, numerosa, sparsa, depresso-hemisphaerica, late rotundato-obtusa, sessilia, nuda, aterrima, opaca; perithecium dimidiatum, basi nunc patens, nunc incurvum, subtus omnino deficiens; paraphyses breves et molles; asci ventricosi, 8-spori; sporae 23—26 μ longae et $4^1/_2$—6 μ latae (halone non computato), late digitiformes, distracto-biloculares. — Affinis A. stenosporae Körb. — Verr. Cub. 2 (Verrucaria subantecellens Nyl. in Flora l. c. sine charact.).

2. A. (s. **Mesopyrenia**) **Cinchonae** Müll. Arg. L. B. 615; Verrucaria Cinchonae Ach. Syn. p. 90 (fide hb. Ach., sed inter specimina Ach. etiam species Microtheliae immixta occurrit); Nyl. in Prodr. Nov. Gran. p. 122 obs. 2. — Verr. Cub. 72^b, 214.

3. A. (s. **Mesopyrenia**) **consanguinea** Müll. Arg.; thallus griseo-albus v. albidus, late expansus, tenuis, demum nonnihil pulverulentus, margine angusto fusco- v. nigrescenti-zonatus, gonidia elongato-chroolepoidea; apothecia sat numerosa, sparsa v. etiam geminatim et ternatim approximata, evoluta $^4/_{10}$ mm. lata, pyramidali-hemisphaerica, inferne thallino-vestita, demum nuda et atra, vertice demum umbilicata; perithecium dimidiatum, basi vix extrorsum patens; paraphyses confertae, connexae; asci ovoidei, superne paullo angustiores, 8-spori; sporae circ. 20 μ longae et 7 μ latae, 2-loculares, loculi lateribus subrepandi. — A proxima A. Cinchonae in eo distat quod apothecia altius et acutius convexa, basi non patentia et leviter minora. — Verr. Cub. $72^{a,c}$.

4. A. (s. **Mesopyrenia**) **fallacior** Müll. Arg.; thallus halone albo mox evanescente indicatus, margine effusus, haud nigro-limitatus, melanogonidiis destitutus; apothecia $^6/_{10}$ mm. lata, sparsa, innato-sessilia, orbicularia et elliptica, deplanato-hemisphaerica, basi in annulum cingentem latum producta, tota tenuiter thallino-velata et griseo-nigra; perithecium nigrum, dimidiatum, subtus nullum; paraphyses copiosae, capillares, laxe connexae; asci cylindrico-ellipsoidei, 2-seriatim 8-spori; sporae 18—20 μ longae et $4^1/_2$—$5^1/_2$ μ latae (halone non computato), late dactyloideae, 2-loculares. — Proxima A. indusiatae Müll. Arg. L. B. 617. — Verr. Cub. 129 (Verrucaria fallacior Nyl. in Flora l. c. sine charact.).

5. A. (s. **Mesopyrenia**) **planior** Müll. Arg.; thallus tenuissimus, albidus, citissime evanescens, cum epidermide maculam e pallide fusco rubescentem formans; apothecia ^{5}—$^6/_{10}$ mm. lata, sparsa, subemersa, deplanato-pyramidalia, undique nuda et nigra, basi ima saepe halone albido (vestigiis thallinis) praedita; perithecium nigrum, dimidiatum, basi crasso-dilatatum, subtus omnino v. fere omnino deficiens; paraphyses connexae, capillares; asci 2-seriatim 8-spori; sporae 15—16 μ longae, $3^1/_2$—$4^1/_2$ μ latae, fusiformi-digitiformes, graciles, distracto-biloculares. — Affinis A. fallaciori, sed apothecia nuda et sporae minores. — Apothecia minus bene evoluta hinc inde occurrunt vertice late delapso-depressa et in foveola terminali vestigiis thalli albi ornata. — II, $627^{a,b}$.

6. A. (s. **Mesopyrenia**) **planorbiculata** Müll. Arg.; thallus albidus, tenuissimus, citissime evanescens et epidermidem testaceo-pallidam relinquens; apothecia ^{4}—$^6/_{10}$ mm. lata, dense sparsa, orbicularia, deplanato-convexa, basi in sectione axili utrinque late crasso-alato-producta, sc. basi horizontaliter alata, nuda et nigra, vertice demum minute umbilicata; perithecium incomplete dimidiatum, subtus tenuius aut tenuissimum, undique nigrum; nucleus pro latitudine apotheciorum parvus, depresso-ellipsoideus, albus; paraphyses densae, connexae; asci subuniseriatim et biseriatim 8-spori; sporae 17—19 μ longae, 3—4 μ latae, digitiformes, graciles, distracto-biloculares. — Proxima A. planiori, sed apothecia basi circumcirca plano-alata et basi incomplete dimidiata. — Verr. Cub. 64 (Verrucaria planorbiculata Nyl. in Flora 1876, p. 364, sine charact.).

7. A. (s. **Mesopyrenia**) **gracilenta** Müll. Arg.; thallus albidus, tenuissimus, laevis, mox evanescens (et cum epidermide maculam rufescenti-pallidam formans), margine linea fusca cinctus; apothecia numerosa, dense sparsa, ^{5}—$^6/_{20}$ mm. lata, orbicularia, deplanato-convexa, mox nuda et nigra; perithecium dimidiatum, nigrum, subtus plane deficiens; sporae in ascis 2-seriales, circ. 13 μ longae et $2^1/_2$—3 μ latae, digitiformes, utrinque obtusae, 2-loculares. — Est quasi forma diminutiva A. planorbiculatae, sed apothecia multo minora et perithecium subtus deficiens. — Habitu dein ad Microtheliam intermediam valde accedit, at sporae hyalinae et ambitu multo graciliores sunt. — Inter miscell. lecta, et Verr. Cub. 67 (sed haec tamen in meo specimine sporis caret).

8. A. (s. **Acrocordia**) **excellens** Müll. Arg.; thallus albus, late expansus, tenuissimus, subverniceus, nitidulus, demum pulverascens, linea nigra flexuosa cinctus; apothecia ^{8}—$^{10}/_{10}$ mm. lata, globosa, nigra, immersa, vertice demum denudato et latiuscule umbilicato modice emergentia; perithecium completum, undique aequicrassum; nucleus albus; paraphyses capillares, connexae; asci lineares, 3—4-spori; sporae imbricatim 1-seriales, 58—85 μ longae, 16—24 μ latae, aequaliter 2-loculares, loculi versus apicem paullo angustati, late obtusi. — Species valde insignis, nulli arcte affinis. — Verr. Cub. 78 (Verrucaria excellens Nyl. in Flora l. c. sine charact.), 79.

9. A. (s. **Acrocordia**) **glaucescens** Müll. Arg.; thallus olivaceo-glaucus, late expansus, crassiusculus, verniceo-laevigatus, opacus, demum rimoso-fissus, margine effusus, undique creberrime fertilis; apothecia ^{4}—$^6/_{10}$ mm. lata, globoso-hemisphaerica, alte convexa, basi immersa, nuda, atra, regularia et torquato-subirregularia; perithecium completum, nigrum; paraphyses capillares, connexae; sporae in ascis linearibus 1-seriatim 8-nae, 28—34 μ longae et 10—13 μ latae, 2-loculares, utrinque obtusae. — Affinis A. limitanti. — Verr. Cub. 77 (Verrucaria glaucescens Nyl. in Flora l. c. sine charact.).

10. A. (s. **Acrocordia**) **limitans** Müll. Arg. L. B. 630; Verrucaria limitans Nyl. in Flora 1866, p. 295. — Verr. Cub. 124, 125, 128 pr. p.

11. A. (s. **Anisomeridium**) **adnexa** Müll. Arg. L. B. 626. — Verr. Cub. 105 (Verrucaria anisomera Nyl. in Flora 1876, p. 364, sine charact.).

12. A. (s. **Polymeridium**) **glaucina** Müll. Arg.; thallus albido-glaucus, sat tenuis, laevigatus, late expansus, sparse lineis hypothallinis nigris peragratus; apothecia sparsa, ^{4}—$^{5}/_{10}$ mm. lata, circiter dimidia altitudine immersa, subglobosa, nigra, vertice obsolete acutata et demum nitida ibique haud umbilicata; perithecium integre nigrum, undique aequicrassum; paraphyses capillares, laxe connexae; asci lineares, 1-seriatim 8-spori; sporae 18—24 μ longae, 4—5 μ latae, fusiformes, aequaliter 4-loculares. — Habitu ad Pyrenulam glabratam accedit et quoad affinitatem naturalem prope A. albidam locanda est. — II, 647.

13. A. (s. **Polymeridium**) **albida** Müll. Arg. Rev. Lich. Eschw. n. 8; Verrucaria alba Eschw. Bras. p. 127, non Schrad. — Verr. Cub. 211.

14. A. (s. **Polymeridium**) **atomarioides** Müll. Arg.; thallus coerulescenti-albus, tenuissimus, laevigatus, linea hypothallina nigro-fusca hinc inde indistincta cinctus; apothecia sparsa, tantum $^{2}/_{10}$ mm. lata, depresso-hemisphaerica, epidermide obtecta v. demum superne denudata, apice vix umbilicata; perithecium dimidiatum, basi deficiens; paraphyses connexae; sporae in ascis 2-seriales, 8-nae, fusiformi-ellipsoideae v. interdum incurvae, 4-loculares, circ. 17—20 μ longae, 5—6 μ latae, utrinque obtusae. — Fere europaeam A. atomariam simulat; ab A. subcinerea Müll. Arg. L. B. 639 apotheciis multo minoribus distat. — II, 629.

15. A. (s. **Polymeridium**) **comparatula** Müll. Arg.; thallus flavescenti-albidus, tenuissimus, evanescens; apothecia circ. $^{1}/_{4}$ mm. lata, globoso-hemisphaerica, alte convexa, nigra, nitidula, vertice umbilicata, basi breviter innata; perithecium basi in sectione axili utrinque incurvum, lateraliter subangulosum, subtus omnino deficiens; paraphyses laxe connexae, confertae; sporae octonae, fusiformes, circ. 20 μ longae et 5 μ latae, 6-loculares. — Species modestula, microcarpa, ob divisionem sporarum nulli cognitarum arcte affinis, prope A. pleiomerellam locanda. — Verr. Cub. 152 (Verrucaria comparatula Nyl. in Flora l. c. sine charact.).

16. A. (s. **Polymeridium**) **octomerella** Müll. Arg.; thallus flavescenti-albidus, crassulus, nonnihil rugulosus; apothecia ^{5}—$^{6}/_{10}$ mm. lata, extus nano-hemisphaerica, immersa, demum fere dimidia parte emersa et subnuda, impure velato-nigra, vertice minute foveolata (et ibidem vestigiis thalli albido-pulverulenta); perithecium nigrum, subcompletum, basi tenuius aut fere nullum; asci subbiseriatim 8-spori; sporae elongato-ellipsoideae, crassiusculae, 16—20 μ longae, 5—7 μ latae, 6—8-loculares. — Verr. Cub. 59.

17. A. (s. **Polymeridium**) **pleiomerella** Müll. Arg.; thallus cinereo-glaucus,

tenuissimus, laevis, linea nigra valida crispula cinctus; statu madefacto leviter vinoso-rubescens; apothecia ^{8}—$^{9}/_{20}$ mm. lata, depresso-hemisphaerica, nuda aut circa basin nonnihil thallino-vestita, nigra, superne nitidula, vertice demum obsolete umbilicata, fere omnino emersa; perithecium basi subpatens, subtus valde attenuatum aut nullum; paraphyses connexae; asci ellipsoideo-cylindrici, 2—3-seriatim 8-spori; sporae 25—28 μ longae et 5—7 μ latae, ellipsoideo-fusiformes, utrinque obtuse acutatae, 9—10-loculares. — Ab A. albo-cinerea differt thallo laevi, apotheciis dimidiatis et sporis multo brevioribus. — Verr. Cub. 107^{a} (Verrucaria pleiomerella Nyl. in Flora l. c. sine charact.).

18. **A.** (s. **Polymeridium**) **pleiomeroides** Müll. Arg.; thallus albus, tenuis, laevis, et superficie relaxata subleproso-pulverulentus, linea nigra limitatus; apothecia copiosa, ^{3}—$^{4}/_{10}$ mm. lata, globosa, immersa, circiter triente emergente thallino-corticata, vertice demum late aperto nudata et nigra; perithecium integre nigrum; paraphyses tenuissimae, molles, connexae; sporae in ascis 2-seriatim 8-nae, fusiformes, utrinque obtuse attenuatae; 37—44 μ longae et 8—9 μ latae, 9—10-loculares. — Ab A. albo-cinerea differt thallo albo et apotheciis immersis. — Verr. Cub. 76 (Verrucaria pleiomeroides Nyl. in Flora l. c. sine charact.).

23. Polyblastia.

Polyblastia Müll. Arg. L. B. 490. — Polyblastia Mass. Ric. p. 147 pr. p.

P. fallaciuscula Müll. Arg.; thallus quasi maculam argillaceo-pallidam formans, tenuissimus, effusus; gonidia chroolepoidea; apothecia ^{7}—$^{8}/_{20}$ mm. lata, depresso-hemisphaerica, superne nuda, nigra et nitidula, caeterum thallino-velata, vertice integra v. demum minutissime umbilicata; perithecium dimidiatum, basi utrinque obtusum, subtus deficiens; nucleus subdepresso-hemisphaericus; paraphyses connexae; sporae in ascis geminatae, 26—30 μ longae et 12—15 μ latae, oblongo-ovoideae, circ. 8—9-loculares, loculi 2—4-locellati. — Nulli cognitarum nisi P. tropicae Müll. Arg. Diagn. Lich. Socotr. p. 15 affinis est, a qua differt thallo minus albido, apotheciis inferne velatis et basi circumcirca obtusis et dein sporis geminatis. — Verr. Cub. 131 (Verrucaria fallaciuscula Nyl. in Flora l. c. sine charact.).

24. Pseudopyrenula.

Pseudopyrenula Müll. Arg. L. B. 602; Spermatodium Trev. Conspect. Verruc. p. 10 pr. p.

Genus in sectiones 3 dividendum est:

s. Hemithecium, apothecia sessilia aut basi breviuscule immersa, non annulo thallino discolore cincta; perithecium conico-hemisphaericum, basi latiuscula deficiens aut attenuatum; sporae oblongo-ellipsoideae, 4-loculares.

s. Homalothecium, apothecia globosa, immersa, ostiolum annulo thallino discolore cinctum; perithecium completum; sporae oblongo-ellipsoideae, 4-loculares. — Hujus loci sunt P. discolor, P. annularis, P. discolorella, P. neglecta et aliae.

s. Polymeria, apothecia globosa, immersa, ostiolum annulo thallino discolore cinctum; perithecium integrum; sporae fusiformes, 6—multiloculares.

1. **P.** (s. **Hemithecium**) **flavicans** Müll. Arg.; thallus cum cellulis corticis maculam argillaceo-flavicantem v. -pallidam formans, tenuissimus v. subobsoletus, margine linea nigra tenella flexuosa cinctus; apothecia dense sparsa, ambitu elliptica v. suborbicularia, diametro majore ^{7}—$^{8}/_{10}$ mm. aequantia, depresso-hemisphaerica, nuda et nigra, vertice subintegra; perithecium completum sed basi tenuius v. etiam ibidem subaequicrassum, in sectione axili lateraliter utrinque valde anguloso-productum; paraphyses laxe connexae; asci 2-seriatim 8-spori; sporae 23—25 μ longae, 7—8 μ latae, 4-loculares. — Ad. P. ellipticam accedit ambitu apotheciorum, sed sectio perithecii potius ut in P. albo-nitente Müll. Arg. L. B. 603 et in P. diremta. — II, 650.

2. **P.** (s. **Hemithecium**) **diremta** Müll. Arg. L. B. 602; Verrucaria diremta Nyl. in Prodr. Nov. Gran. p. 122. — Thallus subinde (ut in Verr. Cub. 96) fere omnino evanescit aut tantum minute macularis superest, unde planta dein primo intuitu satis diversa apparet. — Verr. Cub. 61, 70, 73, 96, 108, II, 654.

3. **P.** (s. **Hemithecium**) **diluta** Müll. Arg. L. B. 602; Verrucaria diluta Nyl. Syn. Lich. Nov. Caledon. p. 91 (non Fée). — Specimin. Féeanum a cl. Nyl. examinatum evidenter male determinatum erat, Verrucaria diluta Fée enim sporas nec 4-loculares nec hyalinas habet (fide descript. auct.), sed specimen verum Féeanum, originale, examini hucusque nondum subjicere potui. — Haec nostra a P. diremta differt apotheciis basi non dilatatis et sporis demum ambitu latioribus. — Verr. Cub. 71? (sine spor.), 74, 75, II {615, 620, 630}.

4. **P.** (s. **Hemithecium**) **subgregaria** Müll. Arg.; thallus albidus, tenuissimus, laevis, effusus, demum subevanescens; apothecia subgregaria, ^{4}—$^{5}/_{10}$ mm. lata, hemisphaerica, primum velata et fere omnino immersa, dein semiemersa et superne nudata, nigra, vertice demum minutissime foveolato-impressa; perithecium dimidiatum, basi non patens, subtus deficiens; nucleus flavicans; paraphyses confertae, connexae; sporae 24—27 μ longae, 8 μ latae, elongato-ellipsoideae, 4-loculares. — Apothecia in areolis corticis reticulatim rimosi subgregarie sita et minus emersa quam in proxima P. diluta. — A P. diremta autem recedit perithecio in sectione axili basi utrinque non latius anguloso-producto. — Verr. Cub. 80.

5. **P.** (s. **Hemithecium**) **superans** Müll. Arg.; thallus albidus, tenuissimus, laevigatus, linea nigra tenui limitatus; apothecia dense sparsa, $^{6}/_{10}$ mm.

lata, leviter depresso-hemisphaerica, basi innata, caeterum nuda et nigra, vertice integra v. vix perspicue umbilicata; perithecium integrum, subtus tamen tenue, basi in sectione axili utrinque vix producto-angulosum; paraphyses confertae, connexae; asci 2-seriatim 8-spori; sporae 20—32 μ longae, 8—13 μ latae, 4-loculares. — A proxima P. diluta differt apotheciis et sporis majoribus. — Verr. Cub. 71 pr. pr. (altera ad P. dilutam pertinere videtur, sed sporae in meo specim. desunt).

6. **P.** (s. **Hemithecium**) **elliptica** Müll. Arg.; thallus flavescenti-albidus, tenuis, laevigatus, nitidulus (spermogoniis copiosis thallum fissurinaceo-perforantibus exasperatus); apothecia copiosa, dense sparsa, ^{5}—$^{7}/_{10}$ mm. lata, ambitu elliptica, ex immerso demum triente emergentia et subnuda, nigra, demum vertice late et profunde umbilicata (et ibidem thalli vestigiis grisea); perithecium dimidiatum, basi non patens, subtus deficiens; sporae in ascis 2-seriales, 15—17 μ longae, 5—$5^{1}/_{2}$ μ latae, elongato-obovoideae, 4-loculares. — A proxima brasiliensi P. subnudata differt apotheciis majoribus, ellipticis et thallo nitido. — In Miscellan. parce lecta, in collectionibus haud distributa.

Obs. Ad eandem sectionem verisimiliter referenda esset Verr. Cub. 3, sed specimina mea incomplete evoluta sunt, sporae desunt et apothecia valde juvenilia.

7. **P.** (s. **Polymeria**) **calospora** Müll. Arg.; thallus olivaceus, late expansus, crassiusculus, subaequalis aut leviter rugosus, superficie laevis, nitidulus, margine zona lata fulvo-fuscescente et fibroso-radiante cinctus; apothecia profunde immersa, globosa, $^{4}/_{10}$ mm. lata, apice in collum gracilem fere totidem longum superficiem thalli attingentem abeuntia, extus nonnisi ostiolo perexiguo cinnabarino perspicua, ostiolum annulo thallino pallidiore decolorato-fulvo ^{12}—$^{14}/_{100}$ mm. lato cinctum; perithecium completum, undique nigrum et undique satis tenue; paraphyses connexae; sporae in ascis 8-nae, fusiformes, magnae, 110—150 μ longae et 17—22 μ latae, utrinque angustatae, circ. 14—18-loculares, loculi fere hexagonales, ulteriores pariete non separati. — Habitus ut in P. myriommate, sed ostiola multo minora et sporae diversissimae. — Verr. Cub. 234.

25. Pyrenula.

Pyrenula Fée Ess. Suppl. p. 76; Trev. Consp. Verr. p. 12; Stitzenb. Flechtensyst. p. 148.

§ 1. Perithecium pyramidali-hemisphaericum, dimidiatum v. basi planiuscula completum et tenuius, lateraliter patens aut angulosum, semper sessile v. saltem alte emergens.

a. Sporae 10—25 μ longae.

1. **P. umbilicatula** Müll. Arg.; thallus pallide fuscescens, late expansus, tenuissimus, laevigatus, linea fusca limitatus; apothecia dense sparsa, ambitu late elliptica, deplanato-hemisphaerica, diametro majore ^{9}—$^{12}/_{10}$ mm.

aequantia, basi leviter immersa, demum nuda, nigra, vertice obtuso umbilicatula; perithecium completum, lateraliter circumcirca valde subalato-productum; sporae in ascis 1-seriales, 8-nae, 17—18 μ longae, 7—8 μ latae, oblongato-ellipsoideae, utrinque late obtusae, subaequaliter 4-loculares. — Verr. Cub. 218[a], pr. p., 218[b] pr. p.

2. **P. elliptica** Müll. Arg.; thallus pallide fuscus v. fuscescens, late expansus, tenuissimus et laevigatus, margine zona nigrescente limitatus; apothecia dense sparsa, subinde confluentia, ambitu late elliptica, depresso-hemisphaerica, apice late obtuso obsolete umbonata, basi planiuscula leviter immersa; perithecium completum, lateraliter circumcirca valide productum; sporae in ascis 8-nae, 1-seriales, 15—18 μ longae, $6^1/_2$—8 μ latae, oblongo-ellipsoideae, subaequaliter 4-loculares. — Similis P. umbilicatulae, sed apothecia submajora, vertice minutissime umbonato-apiculata aut fere aequalia, non ibidem impresso-umbilicata. Sub bona lente statim et, quod video, constanter recedit. — Verr. Cub. 218[a,b] pr. p.

3. **P. subaggregata** Müll. Arg.; Verrucaria aggregata Nyl. Pyrenoc. p. 44 (excl. syn.) et in Prodr. Nov. Granat. p. 120; thallus olivaceus v. olivaceo-pallescens, late expansus, laevis et tenuissimus, linea nigra limitatus; apothecia ^{5}—$^6/_{20}$ mm. lata, numerosa, gregatim subsparsa et conferta et pro parte confluentia, depresso-hemisphaerica, thallino-velata, demum nudata et vertice umbilicata; perithecium completum, basi aequicrassum aut tenuius, extrorsum anguloso-productum; sporae in ascis 1-seriatim 8-nae, 12—17 μ longae, 7—8 μ latae, oblongo-ellipsoideae, aequaliter 4-loculares. — Apothecia longe minus in plagulas connata sunt et majora sunt quam in vera Pyrenula aggregata Fée et thallus alius est. — Verr. Cub. 63, nec non ad Rio Negro: Lindig n. 47.

4. **P. velata** Müll. Arg. Rev. Lich. Eschw. 1[b]; Verrucaria punctiformis Eschw. Bras. p. 123 pr. p. — Apothecia minus velato-obtecta et sporae majores sunt quam in Pyrenula subtrahente, sc. Verrucaria subtrahente Nyl. Lich. Kurz. Javan. n. 53. — Verr. Cub. 128 pr. p.

5. **P. subglabrata** Müll. Arg.; Verrucaria subglabrata Nyl. obs. in Lich. Maingay p. 71; thallus fulvescenti-albidus v. -pallidus, tenuissimus, linea valida nigrescente limitatus; apothecia dense sparsa, basi innata ^{6}—$^8/_{10}$ mm. lata, depresso-hemisphaerica, velata, dein incomplete nudata et impure nigra, vertice (griseo-)umbilicata; perithecium dimidiatum, basi circumcirca leviter anguloso-productum, subtus deficiens, aut valde attenuatum, ad margines saltem breviter et tenuiter inflexum, paraphyses dense connexae, tenellae; asci 1-seriatim 8-spori; sporae 16—22 μ longae et 8—$10^1/_2$ μ latae, utrinque late obtusae aut brevissime e lato apice umbonatae, e biloculari 4-loculares, loculi terminales intermediis pluries minores. — Est fere forma microcarpa P. mamillanae, at perithecia basi non extrorsum applanata sunt. — Verr. Cub. 104 (Verrucaria subglabrata Nyl. in Flora l. c. sine charact.).

6. **P. deplanata** Müll. Arg.; thallus olivaceo-fuscescens, late expansus, laevigatus et tenuis; apothecia ^{4}—$^{6}/_{10}$ mm. lata, deplanato-hemisphaerica, e velato demum subnuda, vertice obsolete umbilicata, saepe varie hinc inde confluentia; perithecium basi tenuissimum aut nullum, caeterum crassum, late extrorsum anguloso-productum; sporae in ascis angustis 1-v. subbiseriales, 12—17 μ longae et $6^{1}/_{2}$—9 μ latae, oblongo-ellipsoideae, subaequaliter 4-loculares. — Quoad formam apotheciorum P. mamillanam et P. marginatam simulat, sed microcarpa et microspora. — E Miscellan. segregata, in coll. non distributa, et dein in Guyana gallica lecta est: Leprieur n. 700.

7. **P. mamillana** Trev. Consp. Verr. p. 13 (exclus. syn. Hook.); Verrucaria mamillana Ach. Meth. p. 120, t. 3, fig. 2, Univ. p. 279 et Syn. p. 92 (fide specim. orig. Ach.); Verrucaria santensis Tuck. ap. Nyl. in Prodr. Nov. Gran. p. 117; Pyrenula santensis Müll. Arg. L. B. 487. — Apothecia speciminis Ach. ^{6}—$^{7}/_{10}$ mm. lata, sat deplanata, centro obtuse subumbonata saepeque plicatula; sporae 1-seriales, 17—20 μ longae et 7—8 μ latae. Apothecia ergo minora sunt quam in P. Kunthii Fée (exclus. syn.) hucusque saepius pro Verrucaria mamillana Ach. habita, et multo minora quam in P. marginata, quae etiam sporis multo majoribus differt. — Verr. Cub. 43, 46, 49, 58, II {642, 660}.

8. **P. Kunthii** Fée Ess. Suppl. p. 80; Verrucaria Kunthii Fée. Ess. p. 88, t. 34, fig. 4 (fid. specim. Fée, cujus apothecia et sporae bene conveniunt); Verrucaria mamillana Auct. (non Ach.) — Verr. Cub. 35, 36, 38, 39, 50^{b}. pr. p. (sporae tamen non visae), II, 659.

b. Sporae 25 μ et ultra longae.

9. **P. coerulescens** Müll. Arg.; thallus fuscescenti-albidus, tenuissimus, laevis, subevanescens, margine linea nigra cinctus et simul partim effusus; apothecia dense sparsa, saepe confluentia, ^{8}—$^{11}/_{10}$ mm. lata, depresso-hemisphaerica, apice late rotundato-obtusa, nec papillifera, nec umbilicata, fere usque ad apicem persistenter velamine decolorato-coerulescente obtecta, basi late truncato-plana; perithecium basi patens et abrupte incurvum, subtus tenuissimum; sporae in ascis subuni-biseriales, 24—28 μ longae, 11—14 μ latae, oblongo-ellipsoideae, utrinque late obtusae, subaequaliter 4-loculares. — Prope P. approximantem (Krplh.) et P. Lagoensem locanda est. — Verr. Cub. 57.

10. **P. subpraelucida** Müll. Arg.; thallus e rufescente v. fulvescente expallens, tenuis, margine effusus; apothecia ^{10}—$^{12}/_{10}$ mm. lata, hemisphaerica, basi plana paullo innata, primum undique corticato-vestita, demum nuda et nitida, basi autem subpersistenter anguste thallino-annulata, vertice minute (subgriseo-)umbilicata; perithecium subtus valde attenuatum, ad angulos non extrorsum dilatatum; asci 1-seriatim (3-)4-spori; sporae 45—60 μ longae et 16—25 μ latae, leviter incurvae, utrinque leviter obtuse acutatae, valde inaequaliter 4-loculares, loculi terminales reliquis

multoties minores (unde sporae primo intuitu 2-loculares). — Proxima Pyrenulae praelucidae Trev., s. Verrucariae praelucidae Montg. Syll. p. 368, sed apothecia magis nudata et sporae in ascis quaternae. — Verr. Cub. 26, 30.

§ 2. Perithecium globosum v. subglobosum, completum, undique aequi-v. subaequicrassum, lateraliter non anguloso-productum, basi magis quam in § 1 immersum.

11. **P. gregantula** Müll. Arg.; thallus pallide fuscus v. demum expallens, tenuissimus, laevis, margine zona nigrescente limitatus; apothecia subgregatim crescentia, $^1/_3$ mm. lata, alte hemisphaerica, inferne thallino-vestita, superne nuda et opaco-nigra, vertice obtuse subacutata aut obsolete mamilligera; perithecium paullo depresso-globosum, completum, undique aequicrassum, lateraliter haud anguloso-productum; paraphyses graciles, granulosae; asci 1-seriatim 8-spori; sporae 11—12 μ longae et 5 μ latae, subaequaliter 4-loculares. — Est microcarpa, microspora, nulli arcte affinis. — II, 651.

12. **P. microcarpa** Müll. Arg.; thallus virenti-albidus, tenuissimus, laevis, margine effusus; apothecia copiose sparsa, $^{25—30}/_{100}$ mm. lata, demum fere dimidia parte emersa ibique ab origine nuda et opaco-nigra, crebre ruguloso-scabrida, vertice late obtuso subdeplanato demum leviter umbilicata; perithecium subregulariter globosum, undique aequicrassum; sporae in ascis subuniseriatim 8-nae, circ. 20 μ longae et 8 μ latae, oblongato-ellipsoideae, subaequaliter 4-loculares. — Habitu ad P. farream accedit, sed magis microcarpa et apothecia non dimidiata. — Verr. Cub. 220.

13. **P. albida** Müll. Arg.; thallus albidus, tenuissimus, margine effusus; apothecia $^{10—13}/_{10}$ mm. lata, subglobosa, basi minus convexa, nuda, aterrima, opaca, basi modice immersa, apice demum nigro-foveolata; perithecium completum undique crassum; sporae in ascis 1-seriales, 8-nae, 20—22 μ longae et 12 μ latae, subaequaliter 4-loculares. — A simili Pyrenula porrecta, sc. Verrucaria porrecta Krplh. Lich. Warm. p. 396 differt apotheciis paullo majoribus, minus alte convexis, aterrimis et sporis majoribus. — Verr. Cub. 80.

14. **P. subimmersa** Müll. Arg., thallus fulvo-pallidus v. demum decolorato-albidus, tenuissimus, laevigatus, demum evanescens, margine effusus; apothecia media altitudine $^9/_{20}$ mm. lata, nonnihil depresso-globosa, ambitu rotundata, primum omnino immersa et tantum ostiolo velato nigro extus indicata, demum triente emergentia et nudata, atra, superne nitida, demum umbilicato-pertusa; perithecium completum, subtus subaequicrassum; sporae in ascis imbricatim 1-serialiter 8-nae, 14—16 μ longae, $6^1/_2$—7 μ latae, ellipsoideae, 4-loculares, loculi terminales paullo minores. — Fere Pyrenulam punctellam v. exstantem (Nyl.) simulat, at apothecia demum distinctius emergentia et sporae multo minores. — E miscellan. segregata, in collect. non distributa.

15. **P. laetior** Müll. Arg.; thallus fulvescens v. demum decolorando-albidus, subtenuis, laevigatus, linea nigra limitatus; apothecia ^{5}—$^{6}/_{10}$ mm. lata, semi-immersa, primum velata, mox nudata, parte emersa hemisphaerica, vertice obtuso demum minuse umbilicata; perithecium completum, basi fere aequicrassum; sporae 14—15 μ longae, 6—7 μ latae, elongato-ellipsoideae, aequaliter 4-loculares. — Subsimilis P. nitidae, sed thallus aliter coloratus, apothecia minora et magis emergentia et sporae minores. Etiam P. feracem simulat, sed sporae parvae, et a P. mamillana differt sectione axili apotheciorum et sporis minoribus. — Verr. Cub. 51.

16. **P. parvula** Müll. Arg.; thallus e variegato olivaceo-fulvescenti-albido pallidus, tenuissimus, laevis, zona nigrescente limitatus; apothecia dense sparsa, ^{3}—$^{4}/_{10}$ mm. lata, circiter dimidia parte v. profundius immersa, parte emersa deplanato-hemisphaerica, superne demum nuda, atra et apice (griseo-)umbilicata, inferne persistenter thallino-obtecta; perithecium conico-hemisphaericum, completum sed basi planiuscula attenuatum; sporae in ascis 8-nae, subuniseriales, 24—26 μ longae et circ. 12 μ latae, subaequaliter 4-loculares. — Habitu ad P. subnitidam et P. endostegam accedit, sed apothecia multo minora. Apothecia magis emergunt quam in P. punctella v. adacta (Nyl.), ubi sporae insuper distincte majores. — II, 653[a].

17. **P. endostega** Müll. Arg.; thallus fulvescenti- et argillaceo-pallidus, tenuissimus, laevigatus, zona nigrescente saepe vix distincta cinctus; apothecia dense sparsa, ^{4}—$^{6}/_{10}$ mm. lata, in sectione leviter depresso-sphaerica, semiemersa, parte emergente hemisphaerica et vertice minute umbonata velamine thallino obtecta, demum superne nudata et nigra; perithecium completum, sed basi attenuatum v. fere deficiens, superne circumcirca in discum deplanato-hemisphaericum late tecto-operculiformem evolutum, discus perithecio tenuior at concolor, in stratum thalli obtegens productus; asci subuniseriatim 8-spori; sporae 23—32 μ longae et 11—12 μ latae, oblongo-ellipsoideae subaequaliter 4-loculares. — Prima fronte P. subnitidam refert, sed sporae minores, apothecia magis vestita, acutius prominentia, apice demum minute umbonata, nec umbilicata et structura partis superioris perithecii omnino alia. — II, 653[b].

18. **P. subnitida** Müll. Arg.; thallus ex olivaceo fuscescenti-pallidus, tenuissimus, laevis, late expansus, margine effusus; apothecia ^{4}—$^{7}/_{10}$ mm. lata, subgloboso, ultra medium immersa, e velato demum nuda aut subnuda, nigra, dense sparsa, rarius subinde gregatim approximata, parte emersa depresso-hemisphaerica; perithecium completum, basi tenuius v. etiam fere nullum, lateraliter non anguloso-productum; asci 1-seriatim 8-spori; sporae 27—45 μ longae, 11—19 μ latae, rectae, oblongo-ellipsoideae, subaequaliter 4-loculares. — Similis Pyrenulae nitidellae, sed sporae duplo majores. Ad P. feracem apotheciis bene evolutis et interdum gregatim confertis accedit, at vere differt magnitudine sporarum et

apotheciis minus emersis et minus alte convexis. — Verr. Cub. 81 pr. p., 97 (Verrucaria subnitida Nyl. in Flora l. c. sine charact.).

19. **P. ferax** Müll. Arg.; thallus fulvescenti- v. argillaceo-pallens, tenuissimus, laevigatus, margine zona fusca v. fulvo-fusca cinctus; apothecia ^{5}—$^7/_{10}$ mm. lata, primum immersa, dein sensim ultra medium emersa, numerosa et saepe gregatim approximata et hinc inde confluentia, e velato nuda, nigra, in sectione leviter depresso-globosa et globosa, basi aequalia v. paullo extrorsum obtuse angulosa; perithecium completum; paraphyses simplices, capillares; asci 1-seriatim 8-spori; sporae 23—32 μ longae et 10—15 μ latae, subaequaliter 4-loculares. — Est quasi P. convexa apotheciis et sporis minoribus. — Verr. Cub. 81 pr. p., 82, 213 pr. p., 215^b, II {$655^{b,c}$, 656}.

20. **P. convexa** Müll. Arg.; Verrucaria marginata v. convexa Nyl. in Prodr. Nov. Gran. p. 117; Verrucaria convexa Nyl. Lich. Husn. p. 23. — E miscellan. selecta, in collect. non distributa.

§ 3. Apothecia omnino immersa, demum apice leviter emergentia, globosa; perithecium globosum, undique subaequale.

21. **P. nitidella**; Verrucaria nitida v. nitidella Flk., Fries Lich. eur. p. 443. — II, 633.

22. **P. hypophyta**; Verrucaria hypophyta Nyl. Prodr. Nov. Gran. p. 119. A diagnosi l. c. data non essentialiter diversa videtur, sed specimen Lindigianum tamen non vidi. — II, 674.

23. **P. aurantiaca** Fée Ess. Suppl. p. 82, t. 37, fig. 1; Verrucaria aurantiaca Nyl. Pyrenoc. p. 48. — II {643, 644}.

26. Anthracothecium.

Anthracothecium Massal. Esam. comp. p. 49; Müll. Arg. Lich. Afric. occid. n. 52.

1. **A. Thwaitesii** Müll. Arg. Lich. Afric. occ. ad n. 52; Verrucaria Thwaitesii Leight. Lich. of Ceyl. n. 190. Lichen eximie ludit magnitudine et forma et superficie nuda aut plus minusve velata apotheciorum, perithecio media altitudine plus minusve patenti-anguloso, basi crassiore et tenuiore, planiore aut magis convexo et dein magnitudine sporarum. Hae 45—150 μ longae, 20—45 μ latae, saepe in uno eodemque apothecio valde inaequales, in ascis 6—8-nae, sed etiam occurrunt subinde 3—5-nae cum aliis abortivis minoribus mixtae. — Verr. Cub. 52, 53, 54, 55, 56 II {$640^{a,b}$, $641^{a,b}$}, et etiam prope Rio de Janeiro: Glaziou n. 5575.

2. **A. variolosum** Müll. Arg. Lich. Afr. occ. p. 44; Verrucaria variolosa Pers., Nyl. Pyrenoc. p. 41. — Verr. Cub. 27, 37, 50^a et ^{b} pr. p., II, 655^a.

3. **A. duplicans** Müll. Arg. Lich. Afr. occ. p. 44; Verrucaria duplicans Nyl. in Prodr. Nov. Gran. p. 116. — II, 657 (specim. minus bona).

4. **A. pyrenuloides** Müll. Arg. Lich. Afr. occ. ad. n. 52; Trypethelium

pyrenuloides Montg. in Ann. Sc. nat. 1843, p. 69, et Syll. p. 371; Verrucaria pyrenuloides Nyl. Pyrenoc. p. 44. — II, 649.

5. **A. libricolum** Müll. Arg. Lich. Afr. occ. ad n. 52; Pyrenula libricola Fée Suppl. p. 82; Verrucaria aspistea Nyl. Pyrenoc. p. 43. Planta e diverso gradu evolutionis valde ludit: apothecia primum omnino obtecta, dein vario modo emergentia et semiemersa et hanc ob causam multo majora apparentia; ostiolum subinde fuscidulum. — Verr. Cub. 24, 84, 92, 138^b (Astrothelium homothelium Nyl. in Flora 1876, p. 365, sine charact.), 138^d, 215.

6. **A. denudatum** Müll. Arg. Lich. Afr. occ. p. 45; Verrucaria denudata Nyl. Pyrenoc. p. 49. — II {618, 652}.

7. **A. ochraceo-flavum** Müll. Arg. Lich. Afr. occ. p. 44; Verrucaria ochraceo-flava Nyl. Pyrenoc. p. 50. Interdum occurrit sporis minus evolutis tantum 13—16 μ longis fereque globosis. — II, 616.

8. **A. fulvum** Müll. Arg.; thallus pallide fulvus, opacus, laevis, margine subeffusus; apothecia dense sparsa, ^{4}—$^5/_{10}$ mm. lata, nano-hemisphaerica, apice tantum denudata ibique nigra et nitida, caeterum crassiuscule thallino-vestita, vertice foveolata; perithecium hemisphaericum, basi planum aut modice convexum, undique completum, etiam subtus crassum ibique $^2/_3$ mm. latum; paraphyses simplices; sporae in ascis linearibus 1-seriales, 13—16 μ longae et 7—12 μ latae, rhomboideae, e centro late ventricoso utrinque breviter et subobliqué contracto-angustatae, loculi incompleti 4, cruciatim siti et inaequales, — Juxta proximam »Verrucariam papilligeram« Leight. Lich. Amazon. p. 457, t. 56, fig. 22 (cujus sporae ambitu consimiles) et prope A. palmarum (Krplh.) Müll. Arg. locandum est. — Verr. Cub. 85.

9. **A. confine** Müll. Arg. Lich. Afr. occ. p. 45; Verrucaria confinis Nyl. Addit. Chili p. 174, Pyrenoc. p. 49. — E miscellan. selecta, in collectionibus non divulgata.

10. **A. decipiens** Müll. Arg.; thallus cum epidermide maculam pallide fuscescentem v. hinc inde albidam formans, evanescens, margine linea nigra cinctus; apothecia late pyramidali-hemisphaerica, obtusa, margine circumcirca deplanata et late extrorsum producta ibique thallino vestita, caeterum nuda et nigra, apice minutissime umbilicata et nitidula, ima basi ^{7}—$^9/_{10}$ mm. lata; perithecium subtus nullum aut tenuissimum; nucleus basi planus; paraphyses connexae; sporae in ascis 8-nae, 27—35 μ longae, 13—15 μ latae, fuscae, 4-loculares, loculi 2—4-locellati. — Extus satis Anthracothecium denudatum simulat, sed apothecia dimidiata et sporae multo majores sunt. Ab A. Canellae albae dein apotheciis et sporis majoribus et perithecio basi late patente omnino differt. — Prima fronte Arthopyrenulam aut Microtheliam simulat. — Verr. Cub. 130 (Verrucaria heterospora Nyl. in Flora 1876, p. 364, sine charact.).

27. Microthelia.

Microthelia Körb. Syst. p. 372.

§ 1. Perithecia dimidiata.

1. **M. thelenula** Müll. Arg.; thallus pallide rufo-fuscidulus, tenuissimus, cum cortice subfurfuraceo-rimulosus, zona lata nigrescente cinctus; apothecia $^2/_{10}$ mm. lata, sessilia, alte hemisphaerica, rotundato-obtusa, nigra et nuda, subopaca; perithecium dimidiatum, basi non dilatatum; sporae in ascis 8-nae, biseriales, mox fuscae, oblongato-ellipsoideae, utrinque aequales et acutiusculae, medio paullo constrictae, 20—23 μ longae, 5—7 μ latae. — Habitu ad M. miculam Körb. accedit, sed valde microcarpa et sporae e contrario longiores et graciliores. — Verr. Cub. 1. (Verrucaria thelenula Nyl. in Flora 1876, p. 364, sine charact.).

2. **M. exigua** Müll. Arg.; thallus flavescenti- v. aurantiaco-pallidus, tenuissimus, laevigatus, margine linea nigra cinctus, demum evanescenti-farinulentus; apothecia basi $^1/_5$ mm. lata, late hemisphaerica, inferne lateraliter thallino-vestita, caeterum mox nuda et nitidula, vertice minute umbilicata, novella velata; perithecium dimidiatum, nigrum; nucleus late hemisphaericus, basi planus; asci biseriatim 8-spori; sporae fuscae, subsoleaeformes, oblongo-obovoideae, medio paullo constrictae, 11—13 μ longae, 4 μ latae. — Eximie affinis et similis est Microtheliae captiosae (Krplh.) Müll. Arg., a qua vix nisi apotheciis triente minoribus, et sporis paullo gracilioribus differt. — Verr. Cub. 14 (Verrucaria microthelena Nyl. in Flora l. c., sine charact.; hoc nomen specificum in genere Microthelia nimis dissonans non accepi.).

3. **M. subfallens** Müll. Arg.; thallus subcarneo-pallidus, tenuissimus, laevigatus, lineis nigris grosse reticulatim peragratus; apothecia basi tecta in sectione $^1/_4$ mm. lata, convexa, fere 3-plo latiora quam alta, persistenter griseo-velata; perithecium dimidiatum, basi dilatato-patens; nucleus basi subplanus, caeterum deplanato-convexus; asci 1-seriatim 8-spori; sporae oblongo-obovoideae, medio leviter constrictae, fuscae, 2-loculares, 11—14 μ longae et 4—5 μ latae. — A similibus et proximis M. captiosa et M. exigua differt apotheciis obtectis. — Verr. Cub. 5 (Verrucaria subfallens Nyl. in Flora l. c. sine charact.).

4. **M. intermedia** Müll. Arg.; thallus rubescenti- v. aurantiaco-pallidus, tenuissimus, linea nigra limitatus, laevigatus, continuus; apothecia $^3/_{10}$ mm. lata, depresso-hemisphaerica, ambitu obsolete elliptica, centro nonnihil umbonato-convexa, nigra, nuda, vertice minutissime fuscescenti-ostiolata; perithecium dimidiatum, nigrum, basi circumcirca crasse deplanatum; sporae in ascis 2-seriatim 8-nae, mox fuscae, 11—12 μ longae et 4—$4^1/_2$ μ latae, oblongo-obovoideae, basi acutiusculae, 2-loculares. — Est quasi M. subfallens apotheciis majoribus et nudis, aut M. thelena valde microcarpa et microspora. — E miscellan. selecta, in collectionibus non edita.

5. **M. miculiformis** Müll. Ag.; thallus pallescenti-albus, tenuissimus, continuus, laevigatus, nitidulus, linea nigra limitatus; apothecia ^{40}—$^{45}/_{100}$ mm. lata, depresso-hemisphaerica, nigra, sed inferne persistenter thallo obtecta, superne velamine thallino impure nigra, basi circumcirca ruguloso-dilatata; perithecium dimidiatum, crassiusculum; sporae in ascis biseriales aut fere uniseriales, 8-nae, mox fuscae, circ. 16—17 μ longae et 6—7 μ latae, oblongo-obovoideae, medio constrictae, 2-loculares. — A M. micula Körb. differt apotheciis depressis et velatis. — Verr. Cub. 68 (Verrucaria miculiformis Nyl. in Flora 1876, l. c. sine charact.).

M. miculiformis v. **detincta**; thallus praeter vestigia circa apothecia adhaerentia omnino v. fere omnino evanescens, apothecia magis nudata. — Verr. Cub. 87 (Verrucaria miculiformis v. detincta Nyl. l. c. sine charact.).

6. **M. hemisphaerica** Müll. Arg.; thallus aurantiaco- aut rubello-pallens, tenuissimus, laevis; apothecia $^{5}/_{10}$ mm. lata, hemisphaerica, nigra, nuda, basi tamen breviter thallino-obvallata, vertice rotundato minute umbilicata; perithecium dimidiatum, sed basi plana etiam strato tenui indicatum, ad latera baseos non anguloso- aut subalato-productum; sporae in ascis 8-nae, biseriales, mox fuscae, cylindrico-obovoideae, 22—25 μ longae, 7—8 μ latae, 2-loculares, articulus inferior leviter longior et paullo angustior. — Habitu ad M. thelenam accedit, sed apothecia minora, basi non alato-dilatata et sporae minores. A similiore M. intermedia recedit structura perithecii et sporis duplo majoribus. — Verr. Cub. 66.

7. **M. thelena** Müll. Arg. Revis. Lich. Eschw. p. 9; Verrucaria thelena Ach. Syn. p. 92; Fée Ess. p. 85, t. 22, fig. 5 (fid. specim. Féean.). — Haec forma normalis speciei inter Lichenes Wrightianos non adest.

M. thelena v. **albicans** Müll. Arg.; thallus albicans. — Reliqua omnia bene conveniunt; apothecia ^{7}—$^{9}/_{10}$ mm. lata, basi deplanata; sporae 25—30 μ longae, 9—11 μ latae, elongato-obovoideae. — Verr. Cub. II, 648.

§ 2. Perithecia globosa aut subglobosa.

8. **M. innata** Müll. Arg.; thallus flavescenti- v. fulvescenti-pallidus, tenuis, laevis, linea fusco-nigra cinctus; apothecia spermogoniformia, $^{1}/_{10}$ mm. lata, omnino immersa, apice thalli prominentia minutissima et ore angustissime discolore cincta, ostiolo nigro perspicua; perithecium globoso-ovoideum, completum, sed basi tenuius; sporae 8-nae, soleaeformes, 2-loculares, 15—19 μ longae et 7—8 μ latae. — Affinis M. appositae, sed apothecia perexigua et omnino immersa. — Verr. Cub. 231.

28. Haplopyrenula.

Haplopyrenula Müll. Arg. L. B. n. 606.

1. **H. vulgaris** Müll. Arg. L. B. n. 608. — Foliicola, II {197 pr. p. et 203 pr. p.}.

2. **H. minor** Müll. Arg.; thallus virenti-argenteus, tenuissime pelli-

culosus, facile secedens; apothecia circ. $^{15}/_{100}$ mm. lata, fusco-nigra, dimidiata, subdeplanata, 3-plo et ultra latiora quam alta, basi circumcirca anguloso-dilatata, diu thallino-velata, demum nuda; sporae ut in H. vulgari. — Saepius occurrunt spermogonia $^{10}/_{100}$ mm. lata, spermatiis leneari-ellipticis 6 μ longis praedita. — Apothecia multo minora quam in H. discopoda, et magis convexa. — Foliicola, II, 714 pr. p.

Subtrib. V. Trichothelieae.

Thallus crustaceus, gonidia chroolepoidea; apothecia simplicia, recta et erecta, extus strigis cellulosis subaculeolato-armatum. — Ad hanc tribum etiam pertinet brasiliensis Stereochlamys horridula Müll. Arg. L. B. at hoc genus inter Lichenes Wrightianos non occurrit. — Obs. Tricharia melanothrix Fée Meth. p. 8, t. 3, fig. 18, et Ess. p. CII, t. 3, fig. 18, quae obvia in Wright. II {231, pr. p., 232 pr. p.}, non est nisi morphosis thalli et genus delendum est.

29. Trichothelium.

Thallus crustaceo-amorphus; systema gonidiale phyllactideo-chroolepoideum; apothecia angiocarpica, simplicia, strigis thallinis fasciculatis et cellulosis rigidis subaculeolato-armata; paraphyses liberae; sporae hyalinae, transversim divisae. — Characteres omnes ut in Porinae sect. Sagediastro, sed apothecia superne fasciculis pilorum radiantibus ornata.

T. epiphyllum Müll. Arg.; thallus olivaceo-virens, tenuissimus, laevigatus; gonidia pulchre phyllactidialia, filamentorum connatorum articuli subtriplo longiores quam lati; apothecia dense sparsa, $^{2}/_{10}$ mm. lata, conico-hemisphaerica, nigra, superne pilis copiosis in fasciculos 3—6 diametrum apotheciorum subaequantes v. superantes subhorizontaliter radiantes connatis ornata; pili fasciculorum numerosi, circ. $2^{1}/_{2}$ μ crassi, versus extremitatem decolorato-pallidiores, caeterum nigro-fusci, microgonidia ostendentes; perithecium dimidiatum; paraphyses gracillime capillares; asci angusti, 8-spori; sporae anguste fusiformes, 38—42 μ longae et $4^{1}/_{2}$—6 μ latae, aequaliter 8-loculares. — Foliicola, e miscellan. selecta, in collectionibus non distributa, et dein prope Apiahy ab oculatissimo Puiggari lectum, et in foliis Smilacis solanifoliae a cl. Dr. Ernst e Caracas missam habeo.

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Druckfehler.

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